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ABSTRACT

Designed as a resource book which can be used to supplement the regular curriculum by integrating one or more career education activities into regularly taught courses, this volume for grades 9 through 12 is one of a series of three manuals, one each for the elementary (grades 1-6), junior high (grades 6-9), and senior high (grades 9-12) levels. It is divided into three sections, Introduction, Activities and Instructions, and Resources. The Introduction describes how to use the manual and briefly discusses the goals of career education. Activities and Instruction, covering the majority of the document, presents career education activities for each of nine subject areas: Social studies (10 activities), English (10 activities), mathematics (10 activities), science (10 activities), art/music (2 activities), health (2 activities), foreign language (2 activities), driver education (2 activities), and physical education (2 activities). Each subject area includes an activities summary, introduction, sample week's lesson plans, cross reference, and a student activities section, which is prefaced by teaching prerequisites and objectives. (The cross reference identifies by number activities which treat particular occupational issues and jobs and activities which reinforce specific subject area topics and skills.) The Resources section, under separate headings, discusses the following three aspects of career education which should be considered in order to implement the activities most productively: Teacher objectivity in career education, liaison with the community, and effective teaching methods for career education. (TA)

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Career Education Activities for Subject Area Teachers

Grades 9 through 12

May, 1975

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INTRODUCTION

WHAT THE MANUAL IS

This manual contains activities on career education for use by instructors who teach:

- social studies (10 activities)
- English (10 activities)
- mathematics (10 activities)
- science (10 activities)
- art/music (2 activities)
- health (2 activities)
- foreign languages (2 activities)
- driver education (2 activities)
- physical education (2 activities)

The activities in each subject area section are listed by a title and a capsule description at the beginning of each section and in an index at the end of the volume. The activities within each subject area section are organized very generally from easiest to most difficult.

The manual is a unique volume because it provides exclusively for subject area teachers a variety of career education activities which:

- are representative of some of the best activities and ideas for activities that have already been developed, supplemented by activities developed solely for this volume;
- involve students in action-oriented exercises, such as field trips and simulations;
- treat affective and attitudinal issues involved in career choices, such as role modeling, as well as cognitive factors;
- provide detailed teaching instructions which, at the same time, promote maximum flexibility and adaptability.

The manual is designed as a resource book which you can use to supplement your regular curriculum by integrating one or more career education activities into the courses you teach. The volume is part of a series of three manuals, one each for the elementary, junior high, and senior high levels. Because there is an overlap in grade levels between manuals (the elementary manual is for grades 1-6, the junior high for grades 6-9, and the senior high for grades 9-12), some of the same activities appear in more than one manual.

HOW TO USE THE MANUAL

Read the Introduction. This section presents the goals of career education and discusses why it is important to integrate career education activities into traditional subject areas.

Read the introductory material that precedes the manual section appropriate to your subject area. There is a section for each major subject area—social sciences, English, mathematics, and science and a final section called "Other Subject Areas" which treats art/music, health education, foreign languages, driver education and physical education. This material discusses how you can integrate the activities into your particular subject area in ways that achieve both career education goals and subject area goals.

Read the activities for your subject area and select those activities for implementation which:

- will most interest and benefit your students;
- are most appropriate to your students' learning styles and abilities; and
- will help you best to achieve your subject area objectives.

Read the three resources at the end of the manual for suggestions on:

- how to avoid sex, ethnic, class, political, and religious stereotyping of careers and jobs;
- how to identify and contact appropriate people, businesses, and groups in your community; and
- how to implement those instructional strategies, such as role plays, interviews and volunteer work, which are highly effective for teaching career education.

These resources can be of vital assistance to you in implementing the activities because they provide teaching suggestions specifically targeted to the needs of career education.

Feel free to use parts of activities or simply ideas from activities. You can also implement the activities with an entire class, with part of a class, or with an individual student as an independent study exercise. If you adapt an activity or find part of an activity particularly useful (or inappropriate), you and your students can help future users of the activity by recording your experience at the end of each activity in the space provided for Comments from Teachers and Students.

WHAT THE GOALS OF CAREER EDUCATION ARE

In a study* funded by the National Institute of Education, five general career education goal statements were identified after a review of the many career education definitions that exist. An attempt was made to narrow the range of goals to those which are feasible for schools to meet. The following definition is not meant to be final, but is offered as a concrete definition for you to agree with or react to. The five general goals are summarized below.

1. Career education should help match peoples' characteristics and desires with career opportunities available. This is particularly important because future jobs will require more specialized skilled workers than in the past and particularly difficult since the types of jobs available may change dramatically.
2. Career education should help students develop awareness of adult roles and capabilities. We need to provide more ways for youth to become involved with employed adults to help youngsters make the transition as smoothly as possible from unemployed dependents to self-employed adults.
3. Through career education, schools should both provide many diverse routes to traditionally rewarded masteries in school and recognize and develop other important interpersonal skills useful for career entry and progression.
4. Career education should help students to understand and to influence their economic-political-social system. Career education, by promoting awareness of the world of work as it actually functions, can help students learn how to use the social system constructively for their own benefit.
5. Career education should provide students with opportunities for both specialized occupational training and basic academic skills.

**Career Education: The State of the Idea and its Prospects for the Future,* by Elliot Eisner, Joseph Schwab, and Decker Walker.

The activities in this manual are designed to help students to achieve the first four of the above five career education goals. More specifically, the activities are intended to assist students to develop:

- self-awareness of their own interests and goals;
- awareness of what long-term career opportunities are available;
- awareness of what specific occupations involve; and
- career-relevant attitudes and skills, such as a positive self-image and the ability to make responsible decisions.

WHY TEACH CAREER EDUCATION

As a subject area teacher, you should consider career education as an integral and appropriate component of your courses which will **increase your students' ability and motivation to learn the content and skills of your subject area.**

There are three ways in which integrating career education activities into your course can help you achieve your subject area objectives.

- In the process of learning about career opportunities and roles, your students will learn a great deal about your subject area **topics** related to the career or occupation that they are studying. For example, if a student engages in volunteer work during a political campaign he or she will learn a great deal about how our political system functions, an important social studies objective.
- Many of the **skills** in your subject area will be developed or reinforced through the use of career education activities. For example, if an English class designs, administers, and analyzes a poll of librarians or journalists, students will develop their writing, speaking, listening and interpretation skills.
- By including career education activities in your course, you will increase your students' **motivation** to study and learn about your subject area topics and to develop related skills. By studying careers in exciting, action-oriented ways, students will be stimulated to delve further into fields related to the occupations they are investigating. For example, mathematics or science students who study engineering as a career by interviewing engineers may want to learn more about the mathematics and scientific skills and knowledge required to become an engineer. In this manner, career topics have the attractiveness of **"relevance"** for studying and learning subject area content matter and skills. Activities dealing with concrete, current occupations of personal concern to your students can add motivation to the disaffected, as well as the involved student who wants to know what your course has to do with the world of an adult: "How can studying the nature of the atom in science do me any good or get me a job?" is the unspoken query of many students today.

  How can career education be integrated into your subject area so that career education and the subject both benefit?

  Let's take as an example an English career education activity in which students interview an employed person of their choice. After the interview, the students write a brief character sketch or short story describing how this individual's personality relates to his or her performance on the job. Conducting the interview and writing the story will help students to perceive both the relationship between job satisfaction and personality and the characteristics of the job being examined. In addition to the above

career education goals, an English teacher can also use this activity to help achieve a number of **English** objectives. The activity can be introduced when students are studying short stories of character, such as O. Henry's "The Cop and the Anthem," D. H. Lawrence's "The Prussian Officer," or Daniel Keyes' "Flowers for Algernon." In this context, the activity can teach a great deal about characterization, drawing conclusions, the short story as a form of literature, clarity of style, and occupational terminology—**all of which are English objectives.** By combining career education and English objectives, students will learn more about both careers and the short story than if each were studied in isolation, because each component of the activity deepens understanding of and interest in the other.

WHAT THE ACTIVITIES ARE LIKE

Four guidelines have determined the selection, development and revision of the activities.

Active Instructional Strategies

One highly effective method for learning about career education is for students to **do** and **observe** what people in various occupations themselves **do.** In addition, frequent contact with employed persons in the community provides students with occupational role models which they might otherwise lack. The manuals have therefore included many activities which involve students in action-oriented exercises, such as role plays, games, volunteer work, peer teaching, experiments, computations, communication (reading, writing, conversing, listening), field trips, interviews and polls.

Affective Educational Approaches

Most career education curriculum materials stress the need for student awareness and exploration of alternative occupations and the selection of a career on a rational basis from among these options. However, many people do not choose careers solely or even primarily on a rational basis of awareness and experience. For these individuals, a purely cognitive educational approach is not sufficient to increase career options because they may select a career based on **nonrational** reasons, such as fear of responsibility, passion for glamour, emulation of or rebellion against a parent, an inflated or underestimated view of their own capabilities, or the influence of a single role model. Career education must help these students to identify and deal with their feelings about careers and jobs by providing activities that are specifically designed to encourage pupils to express and explore their **feelings.** Therefore, the inclusion of affective educational approaches has been an important focus of the manual.

Detailed Teaching Instructions with Flexibility

A third characteristic of the activities is that they provide the teacher with as much information as possible on how to implement them, without destroying their flexibility. It is still up to you to adapt them to your particular students, syllabus, school, and community.

Best Available Materials

The activities offered in the manual represent a unique combination of the most appropriate activities that other curriculum developers have produced along with activities developed by project staff especially for this volume. Initially, project staff conducted an extensive search for appropriate activities, reviewing 278 documents from 60 sources across the nation, including Educational Resources Information Center (ERIC), federal, state and local government agencies, universities, elementary and

secondary school systems, individual teachers, and informal sources such as newsletters and catalogs.* Those activities culled from outside sources were revised by project staff to meet the specific goals the manual is designed to achieve. These outside sources have been credited at the bottom of the first page of each appropriate activity.

The manual has been reviewed in part or entirely by many people. The activities were thoroughly reviewed for accuracy and useability by thirty-four subject area teachers. Several individuals also supplied the authors with useful resource documents. We are grateful for these comments and materials. These people, are, however, in no way responsible for errors, omissions, or biases in the manual. Thanks are given especially to Dr. Ferman Moody and Dr. Marla Peterson for spending several days carefully and productively critiquing earlier drafts of the manual. In addition, Peter Wolff, the Abt Associates quality reviewer for the project, likewise read the entire volume and provided helpful comments. Linda Wurm creatively developed the artistic work – illustrations, charts, and cover. Contributions were also made by Peter Fellenz, Myrna Finn, Julius Finn, and Beatrice Paipert. Early and all but illegible drafts of the activities were typed with patience by Pat Griffin, Elizabeth Harmer, Joanne Klotz, Claudette Piper, Ellie Wiessman, and Mary Stroud. Deborah Greene and Katherine Scheller spent many hours typesetting the manual, while Roy Nelson handled the layout and design. Finally, we are happy to acknowledge the important contribution the NIE Project Monitor, Tory Cowles, made to the manual in terms of her helpful suggestions, ready assistance, and constant availability.

* * *

There is a brief questionnaire on the following page which we would appreciate your filling out and mailing after you have used the activities in your classes. The form will enable us to assess the need for revisions in the activities and the need for publishing additional volumes of career education activities for subject area teachers. Thank you.

*Private publishers and other producers of copyrighted materials were not canvassed. In addition, many fine curriculum products were not used because the materials could not be adapted to the specific needs the manual is designed to meet. Finally, the activities search was extensive, but not definitive, so that some appropriate activities were no doubt overlooked.

YOUR OPINION OF THE ACTIVITIES MANUAL

This career education manual is unusual because it is designed for use by subject area teachers within their traditional discipline areas. As a user of this manual, you are something of a "pioneer" who could help us decide how to improve it and what kinds of new activities and manuals to develop. Please answer and return the following questionnaire.

Thank you.

---

1. To what extent did you find the activities useful for:

	Highly Useful	Of Some Use	Not Useful
- helping students learn about career opportunities or skills needed to enter one or more occupations	☐	☐	☐
- teaching about your subject area (English, math, social studies, science, other)	☐	☐	☐
- helping students develop self-awareness and interpersonal skills that relate to career choice	☐	☐	☐
- providing enjoyable activities for your students	☐	☐	☐
- providing you with detailed instructions so you could implement the activities without much additional work	☐	☐	☐

2. How much preparation time did you have to engage in to teach the activities? (check one)

just the right amount of time ☐ too much time ☐ would have been willing to devote more time to preparation ☐

3. Would you use a similar activities manual that contained additional activities? (check one)

Yes ☐ No ☐

4. In what subject area(s) did you use the activities? (check all that apply)

Social Studies ☐ Math ☐ Science ☐ English ☐

Other ☐ (specify) _____

5. What is (are) the grade level(s) in which you used the manual? (circle all that apply)

K 1 2 3 4 5 6 7 8 9 10 11 12

6. Are your students: (check all that apply)

- members of minority groups
- from rural areas ☐
- from urban areas ☐
- from suburban areas ☐
- behind grade level ☐
- slow learners ☐
- poor ☐
- middle-class ☐
- wealthy ☐
- college-bound students ☐

7. Please add any other comments you may have in terms of how this manual should be revised or what new materials we should develop.

_____

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Career Education

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ACTIVITIES AND INSTRUCTIONS

Section One: SOCIAL STUDIES

1. ACTIVITIES SUMMARY

This section of the manual contains the following ten activities, sequenced very generally from easiest to most difficult.

1. **THE BICYCLE SHOP:** Students use role plays to experience small business occupations.
2. **THREE BURGERS, NO CATSUP:** Students investigate the fast food franchise industry through research, interviews, and observations and evaluate it in light of current course topics and as a career.
3. **MAKING SENSE OF DOLLARS AND CENTS:** Students interview and observe clerical and professional staff employed in the economic institutions in their community to explore office-related and finance occupations.
4. **COPS AND ROBBERS:** Students interview and observe people that operate the criminal justice system.
5. **THE SIX O'CLOCK NEWS:** Students study then produce a news broadcast.
6. **BLUE COLLARS IN THE FACTORY:** Students interview factory workers and study the manufacturing process.
7. **UNCLE SAM WANTS YOU:** A small group of students researches through reading or interviewing the type of careers available in the military and the advantages and disadvantages of a military career.
8. **'BUREAUCRATS' IN THE GOVERNMENT:** Students interview employees in local government agencies and discuss what it is like to work in a "bureaucracy."
9. **VOTE FOR US!:** Students volunteer to work for the election campaign of a candidate of their choice and report their findings and reactions to the class.
10. **HOW CAN I HELP?:** Students role play a case worker and a client during a crisis situation.

2. INTRODUCTION

As a social studies teacher, you should consider career education as an integral and appropriate component of your teaching which will **increase your students' ability and motivation to learn social studies content and skills.** Moreover, it is easy for you to incorporate career education into your subject area because of the flexibility inherent in the variety of courses which fall under the general rubric of social studies, including American history, world history, economics, citizenship, government, problems of democracy, and frequently courses like psychology, anthropology, sociology, as well as mini-courses on drugs, ecology, and other discrete social issues.

How will the integration of career education activities into your social studies courses help you achieve social studies objectives? There are at least three answers to this question.

1. While engaging in the career education activities provided in this manual, your students will learn a great deal about social studies **topics** related to the career or occupation they are studying. For example, if a student engages in volunteer work during a political campaign to learn what it is like to be a politician, the student is also going to learn a great deal about how our political system functions. In short, learning about careers in social science fields automatically involves learning about social science **subject matter.**
2. Many of the **skills** in the social studies curricula will be developed or reinforced through the use of career education activities, including such skills as decision-making, interpretation, and drawing analogies. For example, if your class designs, administers, and analyzes a poll of mem-

bers of a particular occupation, the students will be developing their interpretation and analytical thinking skills.

3. By including career education activities in your courses, you will increase your students' **motivation** to study and learn about social studies topics and develop related skills. By studying careers related to social studies in exciting, action-oriented ways, students will be stimulated to delve further into the field related to the occupations they are investigating. For example, students who study politics as a career by engaging in volunteer work will probably want to learn more about how the political process in America operates and how political institutions in this country function. In this manner, career topics have the attractiveness of **"relevance"** for studying and learning social studies content matter and skills. Activities dealing with concrete, current occupations of personal concern to your students can add motivation to the disaffected, as well as the involved, student who wants to know what social studies has to do with the world of an adult: "Can studying the American Revolution get me a job?" is the unspoken query of many students today.

How can integration of career education with social studies operate in practice? Let us look briefly at a hypothetical Sample Week's Lesson Plan to see how you can integrate career education activities into social studies courses.

3. SAMPLE WEEK'S LESSON PLANS

The sample week's lesson plan on the following page is "being used" in an American government course that is in its eighth week during a year in which there is a political campaign in progress. The lesson plan presumes that you have already addressed such issues as how parties nominate candidates, conduct conventions, and run in primary elections. You have also, one can assume, discussed the nature of the two-party system and provided some historical background on the genesis and progress of the two major parties.

You have now reached the point of discussing election campaigns themselves, the nitty-gritty of how politicians and campaign workers run a campaign—how they staff it, organize it, settle on the issues to be stressed and the positions to be taken, make speeches, issue announcements to the media, and so on. You have chosen to integrate a career education activity on volunteer work in a political campaign (Activity #9) into the third class period during this hypothetical eighth week. You have integrated the activity in such a way that it not only will help your students become familiar with an important aspect of a career in politics, campaigning, and thereby achieve **a career education objective,** but it will also help your students to learn what politics at the local level is really like in America, an **American government course objective.**

SAMPLE WEEK'S LESSON PLANS

(An illustration of one way to integrate a career education activity into your course.)

HOMEWORK ASSIGNMENT	DESCRIPTION OF CLASS ACTIVITY
Students read newspapers the previous weekend to identify all actions taken and statements made by elected officials or people campaigning for office which might have been made for political purposes. Students also read chapter in textbook on campaign strategies.	• Class discusses and compares results of newspaper reading exercise with textbook discussion of campaign strategies and then identifies common election campaign strategies used by politicians. • Class breaks into small groups, each of which selects a politician whose campaign strategies it must identify, map out, and justify.
Students read textbook chapter on internal organization of political parties.	• Class reviews homework assignment and then develops a diagram on blackboard of internal party structure of Democratic and Republican parties. Teacher compares results with structure of political parties in Russia and Italy.
Students telephone local political organizations to learn what election activities they are currently or will be engaging in. Students also read chapter in textbook on grass roots political organization and campaigning.	• Class discusses results of telephone survey and compares it with textbook description of grass roots political activity. • Teacher introduces career education activity explaining its twin goals of gaining greater familiarity with grass roots political activity and learning about careers in politics and what they are like. (Activity #9)
Students arrange for volunteer work with local campaign. Students also read chapter in textbook on role of issues and personalities in political campaigns.	• Class discusses role of issues and personalities in political campaigns in terms of which is more important and why and how voters decide which party and candidate to vote for.
Students engage in volunteer work after school or evenings. Students also develop a hypothetical "platform" for each candidate for whom they are doing volunteer work stating his or her position on several key issues.	• Students compare their "platforms" and discuss why they differed and what they are designed to accomplish -- how they will win votes, etc.

4. CROSS REFERENCE

The cross reference below identifies by number activities which treat particular occupational issues and jobs (listed across the top of the page) and activities which have been developed for use in specific social studies courses (listed down the left-hand side of the page). By using the reference, you can locate activities by the specific social studies course which you teach and by specific jobs or occupational issues which you would like your students to learn about.

SOCIAL STUDIES

CROSS REFERENCE

SUBJECT AREA / OCCUPATIONAL FOCUS	Assembly Line Worker	Auto Mechanic	Banker	Blue Collar Worker	Bookkeeper	Computer Worker	Data Processing Occupations	Electrical Engineering Technician	Environmental Protection Jobs	File Clerk	Food Industry	Franchise Operator	Government Jobs	Investment Counselor	Judge	Lawyer	Manufacturer	Military Position	Newscaster	News Editor	Police	Politician	Prison Guard	Probation Officer	Prosecutor	Repair Person	Salesperson	Secretary	Small Business Owner	Social Service Agency Employee	Social Worker	Stenographer	Stock Broker	Teller	Typist	Video Equipment Specialist
American Government						8		8				8					7																				
American History	6	5		6		9		9								6			5	5		9														
Citizenship		5				9	8	9	8				8		4	4		7	5	5	4	9	4	4	4	1	1		1							5	
Current Affairs	6			6		9	8	9	8				8		4	4	6	7			4	9	4	4	4	1	1		1	10	10					
Current Events			3		3					3	2	2		3			5											3				3	3	3	3	
Economics	6		3	6	3		8		8	3	2	2	8	3			6									1	1	3	1	10	10		3	3	3	3	
Government						9		9							4	4					4	9	4	4	4					10	10						
Law															4	4					4		4	4	4												
Problems of Democracy	6		3	5	3	9		9		3				3	4		6	7			4	9	4	4	4			3		10	10	3	3	3	3		
Sociology	6		3	6	3		8		8	3	2	2	8	3	4	4	6				4		4	4	4			3		10	10	3	3	3	3		
World History		5																7	5	5															5	

OCCUPATIONAL FOCUS:

- Salesperson
- Small Business Owner
- Repair Person

SOCIAL STUDIES RELEVANCE:

- Citizenship
- Current Affairs
- Economics

Activity #1

Subject Area:

Social Studies

THE BICYCLE SHOP

Capsule Activity Description:

Students use role plays to experience small business occupations.

Teaching Prerequisites:

materials needed: copies of the role profiles
contacts with community: none
approximate preparation time: ½-1 hour
approximate class time: 1-2 classes

Social Studies Objectives:

to understand the nature of selling and buying;
to learn about the problems of small business ownership and management;
to identify methods for redressing consumer grievances.

ACTIVITY

In this activity, students role play consumer problems related to buying, selling, and repairing bicycles. This topic was chosen because of its relevance to senior high students, because there has been a recent increase in the number of bicycle sales and repair shops throughout the country, and because bicycle shops represent most of the typical problems of small business ownership and management. However, you and your students can develop role plays on any of many small businesses, including shoe repair shops, bakeries, clothing stores, toy stores, travel agencies, watch and camera stores, barber shops and beauty salons, greeting card shops, bookstores and variety stores.

You can use the activity in a current affairs course whenever you discuss the problems small businesses are facing in a recession. In addition, the role plays focus on consumer complaints, making the activity relevant whenever you discuss consumerism. The activity's relevance in an economics course relates to its focus on the role of small businesses in the economy, business failures and bankruptcy, and the

concepts and practice of entrepreneurship and laissez-faire. Finally, the salesperson's and business person's dilemma between his or her civic duty and desire for profit is raised in the activity, making the exercise a useful one in citizenship classes which discuss civic responsibility.

After each role play, students can discuss one or more of the following issues:

1. What are some of the problems small businesses must face in dealing with customers? Are these likely to be the same problems big businesses must face?
2. Are consumers likely to face different problems with small businesses than with large ones?
3. How can consumers seek redress of grievances when they have been sold shoddy or defective merchandise or purchased goods under false pretences?
4. Are small businesses likely to respond to consumers in terms of sales and handling complaints and repairs differently in a recession than in a healthy economic situation?
5. How can a small business' responses to consumer complaints influence its profits and losses?
6. Is a small business likely to treat its customers differently when it first opens than when it has established itself?
7. What skills does a salesperson need to be successful?
8. What kind of personality does a salesperson need to be successful? Does he or she have to be aggressive, hard-nosed, and tough-minded? What about store managers or small business owners: what personality or characteristics do they need to succeed?
9. What are the personal satisfactions that come from "making a sale" or doing a good job of repairing an appliance? What frustrations are involved in failing to "make a sale"? What satisfactions do people derive from managing their own business, supervising the work of others, and being a businessperson in the community? What frustrations are involved?
10. When a businessperson's or salesperson's desire to make money conflicts with his or her civic duty to serve the public, which usually wins? Which should win? (Use the role plays as examples of this conflict.)

Three sample role plays are provided below. You or your students can revise them to suit your particular needs or develop ones of your own. Before engaging in them, students can participate in one or more of the "warm-up" exercises suggested in the section on Role Playing under the heading "Effective Teaching Methods for Career Education" at the end of the manual. After the role plays, you can encourage students to develop their own role profiles in small groups, with each group presenting its profiles to one other group which then plays the parts.

SITUATION 1 BUYER BEWARE

Purchaser

You want to buy a bicycle but you don't know whether to get a one-, three- or ten-speed or how much money to pay. You plan to use your bike for weekend trips of five to fifteen miles, but that's about it. There's a small chance you might use it some days to commute to work, but that's not likely. You have come for advice to the Best Buy Bicycle Shop. You enter and go up to a salesperson. What do you say?

Salesperson

You work in the Best Buy Bicycle Shop. You sell all kinds of bikes. You want two things: lots of sales, preferably of expensive bikes; and satisfied customers. Sometimes you have to decide whether you want a satisfied customer buying a less expensive bike or an unhappy customer buying a more

expensive one. A customer who looks very uncertain has just approached you. How will you handle his (her) questions?

SITUATION 2 PRESSURE-CONFORMITY

Purchaser

You want to buy a new bicycle for your eleven-year old son (daughter). He (she) has outgrown his (her) old bike and wants you to get him (her) a fancy "high-rise" bike with a "banana" seat and stick shift. You think they're unsafe, too expensive, and don't last too long. Besides, your son (daughter) will try to do all kinds of unsafe tricks and games on a "high-rise." You want to get him (her) a three-speed English bike that you feel is safer. You have decided to ask a salesperson for advice, taking your son (daughter) with you. You both have just walked into the Swell Sales Bicycle Store and gone up to the salesperson. What do you say?

Son (Daughter)

You have outgrown your old bike and want your father (mother) to buy you a new, fancy "high-rise" bike with a "banana" seat and stick shift. That's the kind of bike all your friends have, and you like the looks of it. It makes you feel like you're riding a motorcycle—in fact, as soon as you're old enough and have the money, that's what you plan to buy. Your father (mother) doesn't like the "high-rise" bikes because he (she) thinks they're poorly made and unsafe. You think they're as safe as any other bike. And besides, you really can't do as many tricks on an English bike as you can on a "high-rise"—although you can't tell your father (mother) shopping for a bike. You've both just entered the Swell Sales Bicycle Store and walked up to a salesperson. What do you say?

Salesperson

You are a salesperson in the Swell Sales Bicycle Store. You are an expert in children's bikes. It's so much fun when a parent and child come in looking for a bike and argue over what kind to buy. Usually, the kid wants the more expensive bike. But you have to watch yourself. If you side with the kid, the parent may get angry with you and buy the bike somewhere else. A parent and child are coming over to you right now. You wonder what kind of disagreement they'll have!

SITUATION 3 PRESSURE, HARD SELL

Purchaser

You have decided to buy a medium-priced three-speed bike, for around $75. You want it to run errands and make short trips, nothing special. You walk into Rodney's Rugged Bike Shop to buy a Modesto Model 99Z. You walk up to the salesperson. What do you say?

Salesperson

You are a salesperson in Rodney's Rugged Bike Shop. You get a commission on every bike you sell—and the more expensive the bike, the larger your commission. In addition, you are tired of seeing customers buy what you feel are cheap, clumsy bikes when they could buy a decent ten-speed for $125 to $175 and have a bike that will last and give a comfortable ride. Yet customers keep coming in asking for bikes like the three-speed Modesto 99Z, which sells for $70 when for only $50 more they could buy a ten-speed bike like the Superba XKG. A customer has just come in the store and comes up to you. How will you handle him (her) if he (she) too wants a bike like the Modesto 99Z?

Activity #1

Useful Prior and Subsequent Activities

- Students can invite a salesperson to class to observe the role plays and comment on them.
- Students can submit their "consumer complaints" to a consumer protection agency for a suggested resolution.
- Students can develop a list of things to observe when they purchase goods and record their observations after their next ten purchases. Observations can focus on the salesperson's attitudes toward his or her job and toward customers, and on any sales techniques used.

Resources:

- Small Business Administration
  Public Information
  1441 L Street, N.W.
  Washington, D.C. 20005

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Food Industry Employee
- Franchise Operator

SOCIAL STUDIES RELEVANCE:

- Economics
- Current Events
- Sociology

Activity #2

Subject Area:

Social Studies

THREE BURGERS, NO CATSUP

Capsule Activity Description:

Students investigate the fast food franchise industry through research, interviews and observations and evaluate it in light of current course topics and as a career.

Teaching Prerequisites:

materials needed: none
contacts with the community: observation of a franchise store; interviews with store and staff operators
approximate preparation time: ½-1 hour
approximate class time: 1½-2 classes

Social Studies Objective:

to study the role of entrepreneurship as typified in the franchise industry;
to study the impact of fast food service restaurants on the eating habits, mobility patterns, and social behavior of Americans;
to study the nature of advertising.

ACTIVITY

The purpose of this activity is for students to act as a consumer group, à la Nader's Raiders, to explore the explosion in the fast foods franchise industry. There are two major divisions in the activity. In part one, students do background research on the nature of franchising. In part two, students research franchising in their local community. The exercise lasts a period of a month; however, most of the work takes place outside of class time. Class time includes a short introduction followed a week later by a class period devoted to the part one report and sub-division of the class into groups. Except for occasional short group meetings at the end of class, there is no major class time used until the final reports are ready about three weeks later. These reports take no more than two class days.

The activity can be easily integrated into an economics course whenever franchising is discussed and also when advertising as a mechanism for increasing or maintaining public demand for products and as a multi-billion dollar business technique is discussed. The activity also has relevance for sociology

courses in terms of discussions of life styles of today's youth (gatherings around the Dairy Queen, etc.), ways in which youngsters are socialized into the work force (as waitresses, waiters, busboys, busgirls, and car hops), the interrelationship between cars and fast food franchises, and the relationship between eating easily accessible and inexpensive restaurant-bought food and the decline of family life around the dinner table. The activity also can be introduced into a current events and problems of democracy course in terms of the fast food franchise's heavy reliance on advertising both in the media and as a form of visual pollution of the street.

Part One. Students begin the activity by doing a modest amount of basic research into the nature of franchising in general and the peculiarities of the fast food franchise industry in particular. The research can include using library sources, economics textbooks, interviews with local consumer advocate groups, better business bureaus, small business associations, and the Chamber of Commerce, and a trip to the local government agency responsible for licensing fast food franchise establishments. Students can conduct this part of the activity by dividing up the research among different groups of students or as an entire class. When the research is complete, each group or the class as a whole develops a report which:

- describes the growth of the fast food franchise industry;
- explains the industry's rapid growth;
- describes the different types of businesses which are involved in franchise operations in addition to fast food outlets;
- and indicates how many franchise operations have failed and why they failed.

Part Two. The class identifies four or five types of local franchise operations, such as hamburger and coke places (McDonalds, Burger King, Carrol's), ice cream places (Tastee Freeze, Dairy Queen, Mr. Softee), specialty foods (Kentucky Fried Chicken, Pizza, Fish Fry), and other local establishments that are regional but still franchises.

Students then break into small groups, and each group selects a type of franchise to research. First, groups write to the main office and district office, if there is one, asking for all the information that they can send on operating one of their franchises. If the material is not sufficient enough to give the groups the "company view," students write back with specific questions, particularly in the area of cost outlay, length of contract, amount of independence, and personal policy regulations.

The groups then interview people working for the franchises they have chosen to study. Usually there are employees within the school or community or friends of the students in the neighborhood who can help set up the interviews. It is better not to interview employees at their place of work. A sample of an interview form each group develops follows:

Job title _____

Job tasks _____

_____

Age of worker _____

Length of time working there _____

Starting salary, raise schedule _____

_____

1. What are the requirements to get this job? _____

_____

2. What hours and/or shifts do you work? _____

3. What opportunities for advancement are there? _____

_____

4. What is the turnover of employees (number and frequency)? _____

_____

5. What are the reasons for this turnover? _____

_____

6. What are the advantages of this job? _____

_____

7. What are the disadvantages? _____

_____

Each group interviews two or three people per franchise operation.

The third step of the investigation is to observe the operation. Students pick three or more different times in the week and spend from ½-1 hour observing the operation. Students choose varying times to get the "full picture," for example, weekday at 8 PM, Friday at 10 PM, Saturday at 12 noon and Sunday at 4 PM. Students observe three aspects: (1) employees, (2) customers, and (3) the general atmosphere. Each group develops a checklist of things to observe, as in the following illustration.

Employees:

1. Do they appear to enjoy
   their work? _____
   the other employees? _____
   the customers? _____

2. Are they
   clean? _____
   polite? _____

3. Do they get a chance to rest? _____

4. What is their usual physical position? _____

Customers

1. Who seems to frequent the establishment? (Keep a count.)
   Men _____
   Women _____
   Boys _____

Girls _____
Children _____
Families _____

2. How many people frequent the operation for a
snack? _____
light meal? _____
major meal? _____

3 How do the patrons arrive at the operation?
by car _____
on foot _____
by bicycle _____
by motorcycle _____

4. What activity do the clientele engage in besides eating?
talking _____
fooling around _____
picking up dates _____
meeting people _____
fighting _____
watching passers-by _____

5. How many patrons seem to come here regularly?
regular customers _____
one-time customers _____

6. Is the operation frequented by tourists? Where are they from? (Check license plates.)

The Establishment

List words, especially adjectives, that occur to you that describe the working situation. List them under the two general topics below or under any other topics that occur to you.

the Building	the Customers

After conducting the research, each group reports its findings to the class and compares them. In particular, the class identifies the advantages and disadvantages to working in a fast food franchise operation and to owning and managing a franchise business. The class then relates the results of their research to the subject area content of the course they are studying. For example, if the activity was conducted as part of a sociology course, the class can identify the ways in which the fast food franchise industry may have altered the eating habits, social life, and transportation problems of the community.

Useful Prior and Subsequent Activities:

- Students can write their findings into an article for submission to the school and/or community newspaper.
- Students can invite a member of the Chamber of Commerce, Better Business Bureau, or small business association to class to listen to their reports and comment on them.

Resources:

- Small Business Administration
  Public Information
  1441 L Street, N.W.
  Washington, D.C. 20005
- McDonald's Corporation
  One McDonald's Plaza
  Oakbrook, Illinois 60521
- Burger King Corp.
  P.O. Box 520783
  Biscayne Annex
  Miami, Florida 33152
- Kentucky Fried Chicken Corp.
  1441 Gardiner Lane
  Louisville, Kentucky 40213
- "The Patented Gate & the Mean Hamburger"
  by Robert Penn Warren

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Secretary
- Bookkeeper
- Typist
- File Clerk
- Teller
- Stenographer
- Stock Broker
- Investment Counselor
- Banker

SOCIAL STUDIES RELEVANCE:

- Economics
- Current Events
- Sociology
- Problems of Democracy

Activity #3

Subject Area:

Social Studies

MAKING SENSE OF DOLLARS AND CENTS

Capsule Activity Description:

Students interview and observe clerical and professional staff employed in the economic institutions in their community to explore office-related and finance occupations.

Teaching Prerequisites:

materials needed: none
contacts with community: tour and interviews in local economic institutions
approximate preparation time: ½-1 hour
approximate class time: 1½-4½ classes

Social Studies Objective:

to learn about the role of investment, savings, and loans in the operations of the economy;
to learn about the operations of financial institutions;
to study discrimination in the job market against women.

ACTIVITY

The purpose of this activity is to (1) examine the people who in some ways are the backbone of many large and powerful financial institutions, the office or clerical workers who staff and carry out the day to day transactions of the banking, insurance, stocks and bonds (investment), and finance and loan industries; and (2) to become familiar with the professional staff of investment counselors and financial analysts who influence the lives of many citizens.

The activity can obviously and easily be integrated into an economics course whenever you deal with banking, interest rates, loans, the stock market, or investments. In addition, economics courses often seem highly theoretical and abstract to students. An activity such as this one can bring the course an element of "reality" and an opportunity for identification with the economic system. The activity can also be implemented in sociology, current affairs, and problems of democracy courses because, by focusing significantly on the financial industry's clerical staff, most of whom are women, the activity

Activity #3

raises crucial issues of discrimination against women, a highly relevant topic in any courses dealing with vocations and employment.

The activity has four major stages:

1. field trips to one or more financial institutions;
2. research on the jobs within the institution;
3. interviews with employees in the institution; and
4. discussion of findings.

The class breaks into small groups, as many groups as there are industries to investigate. Each group visits one or more financial institutions in the community. You or your students can make arrangements for these tours by contacting the personnel offices of the respective companies.

The purpose of the tours is to get an overview of what happens and a feel for the "atmosphere" in the industry. Before going, each group draws up a list of observations it plans to make, such as:

- the ratio of clerical to professional staff;
- the number of men in clerical positions and women in professional positions;
- the age of the clerical and professional staff;
- what the clerical and professional staff seem to be doing;
- what the attitude of the clerical and professional staff seem to be (happy? bored? interested? etc.);
- what the working conditions of each are like (noisy? quiet? crowded? spacious? etc.);
- do the men and women socialize together or separately?

As part of the tour, each group makes sure it receives a list of the job titles of people employed in the firm.

In the second part of the activity, each group member chooses two job titles within the institution, one title belonging to clerical staff (e.g., bookkeeper, file clerk, typist) and a second title describing a professional occupation (e.g., stock broker, financial analyst, investment counselor). Using materials in the library, guidance office, and career information center, each student gathers information about the job titles, including job tasks, salary ranges, educational and training requirements, and how the job relates to the other occupations in that institution.

Having gathered this information, each student interviews two people who fit the job descriptions they have researched. If the institutions themselves (personnel offices) will not arrange for interviews, students can find out whether other students and school faculty have relatives or neighbors who either work at these jobs or know people who do.

Prior to conducting the interviews, each group develops an interview form listing the questions it wants to ask. Groups are told to develop questions on (1) the nature of the occupations, (2) why women are primarily confined to the clerical tasks, and (3) on issues related to the subject matter under study (e.g., interest rates). Students can consider including the following topics for inclusion in their questionnaire:

- job title
- office or business location
- tasks performed

- hours or shifts
- salary range: starting, average, maximum
- fringe benefits
- opportunity for advancement
- education and/or training needed
- advantages of the job
- disadvantages of the job
- how they decided to enter the profession
- how they got the job
- whether there is discrimination against women
- why the clerical staff is mostly women and the professional staff mostly men
- whether the male/female ratio is changing in both the clerical and professional staffs
- whether men and women socialize together or separately on the job
- whether women who are professionals are treated differently from men, or men who are clerical staff are treated differently from the women; whether there is discrimination against minorities, and, if so, what kind.
- questions about subject area issues, for example:
  - Who determines interest rates? How do they decide what they should be?
  - Is there discrimination against women who come to these institutions as clients—e.g., seeking a loan or wanting to invest some money?

After conducting the interviews, each group develops a report of its findings by combining the answers to the questions each member asked. The reports discuss the three areas of (1) careers in the financial world, (2) discrimination against women (and men), and (3) subject area issues. Reports can be a written text or outlined for use in presentation. Each group presents its findings to the class, and all groups' findings are compared for inconsistencies and uniformities. Follow-up discussion can be held on one or more of the following issues:

- Is there discrimination against women? If so, what kind; e.g., not hiring them as professionals? not promoting them to professional status? treating women professionals already employed differently from men? paying women lower salaries for the same work or not allowing them to supervise men?
- Is the institution attempting to do anything about such discrimination if it exists?
- What do you feel the company should do about discrimination against women?
- Is there discrimination against men who apply for clerical positions or who are already employed in them?
- Why do many men and women feel women "have no head" for money, yet in many households it is the wife who manages the family finances? What are some other attitudes toward women that lead people to discriminate against them in the job market and induce women themselves to feel inadequate to perform successfully in certain jobs?
- To what extent do these institutions depend on their clerical staff for smooth functioning? Do any clerical staff end up doing part of the professionals' jobs?
- How do most people enter the financial world? How much background in mathematics is needed?

Activity #3

- What important decisions do executives in these institutions make that affect the economy and the lives of many citizens? Who decides, for example, whether to provide a loan and at what interest rate?
- What are the advantages and disadvantages to being on the clerical staff of a financial institution? Can this be a route to advancement to professional status?

Useful Prior and Subsequent Activities:

- Students can do further research into clerical jobs by interviewing clerical staff in other industries and businesses.

Resources:

- **Mr. Banker** (board game), distributed by the Federal Reserve Board of Minneapolis
- **Everything a Woman Needs to Know to Get Paid What She's Worth,** by Caroline Bird (Bantam, paperback)
- National Association of Bank-women
  111 East Wacker Drive
  Chicago, Illinois 60601
- Katherine Gibbs Secretarial School
  200 Park Avenue
  New York, New York 10017

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Police Officer
- Prison Guards
- Judge
- Prosecutor
- Lawyers
- Probation Officers

SOCIAL STUDIES RELEVANCE:

- Problems of Democracy
- Current Affairs
- Citizenship
- Government
- Law
- Sociology

Activity #4

Subject Area:

Social Studies

COPS AND ROBBERS

***Capsule Activity Description:**

Students interview and observe people that operate the criminal justice system.

Teaching Prerequisites:

materials needed: none
contact with community: interviews and visits to police agencies, courts, and prisons
approximate preparation time: ½-1 hour
approximate class time: 1½-2 classes

Social Studies Objectives:

to explore the criminal justice system;
to discuss some of the ethical and constitutional issues involved in controlling crime;
to study the causes of crime in particular and of deviant behavior in general.

ACTIVITY

The purpose of this activity is to explore one or more components of the criminal justice system. The focus is not on the defendant or prisoner but on the people that deal with him while he or she is in the system.

The main exercises in this activity are research and interviews. When possible, either field trips by the whole class on school time or by the small groups after school time can be incorporated.

A study of the criminal justice system can easily and appropriately be integrated into several social studies courses in a number of ways. For example, crime is a "problem of democracy" and a salient

*The core idea for this activity was developed by Patrick Weagraff. We are grateful for permission to use it. It is part of *Job Cluster Curricula for Public Service Occupations at the High School Level*, State Board for Vocational Education (Sacramento, California: 1973), which may be ordered from the State Board for Vocational Education, Sacramento, California at no cost.

issue in "current affairs." Problems of ethics and law are treated at numerous points in citizenship courses. Law enforcement is a central feature of government, and studies of deviance and criminology are important topics in sociology courses.

Before engaging in the small group part of the activity, give students an overview of the criminal justice system. The chart provided on the following page can be duplicated and passed out to the class and then explained.

The class then breaks into small groups. Each group (1) picks a component of the criminal justice system it wants to research, (2) develops methods for conducting its research, (3) conducts its research, and (4) writes a report of its findings for presentation to the class and for role playing.

Groups can select from among four areas of criminal justice: law enforcement, prosecution, courts, or corrections. Within these areas, students can concentrate on crime in general or on particular types of crime and criminals, such as:

- juvenile delinquency
- white-collar crime
- so-called "victimless" crimes (drunkenness, prostitution, homosexuality, certain drug offenses)
- organized crime
- treatment of the poor or minorities in the criminal justice system
- shoplifting

What follows below are suggested methods for researching each of the four components of the criminal justice system and important career information and social studies subject area matter students can learn as a result of that research.

(a) Law Enforcement. Students can conduct research into law enforcement in a number of ways:

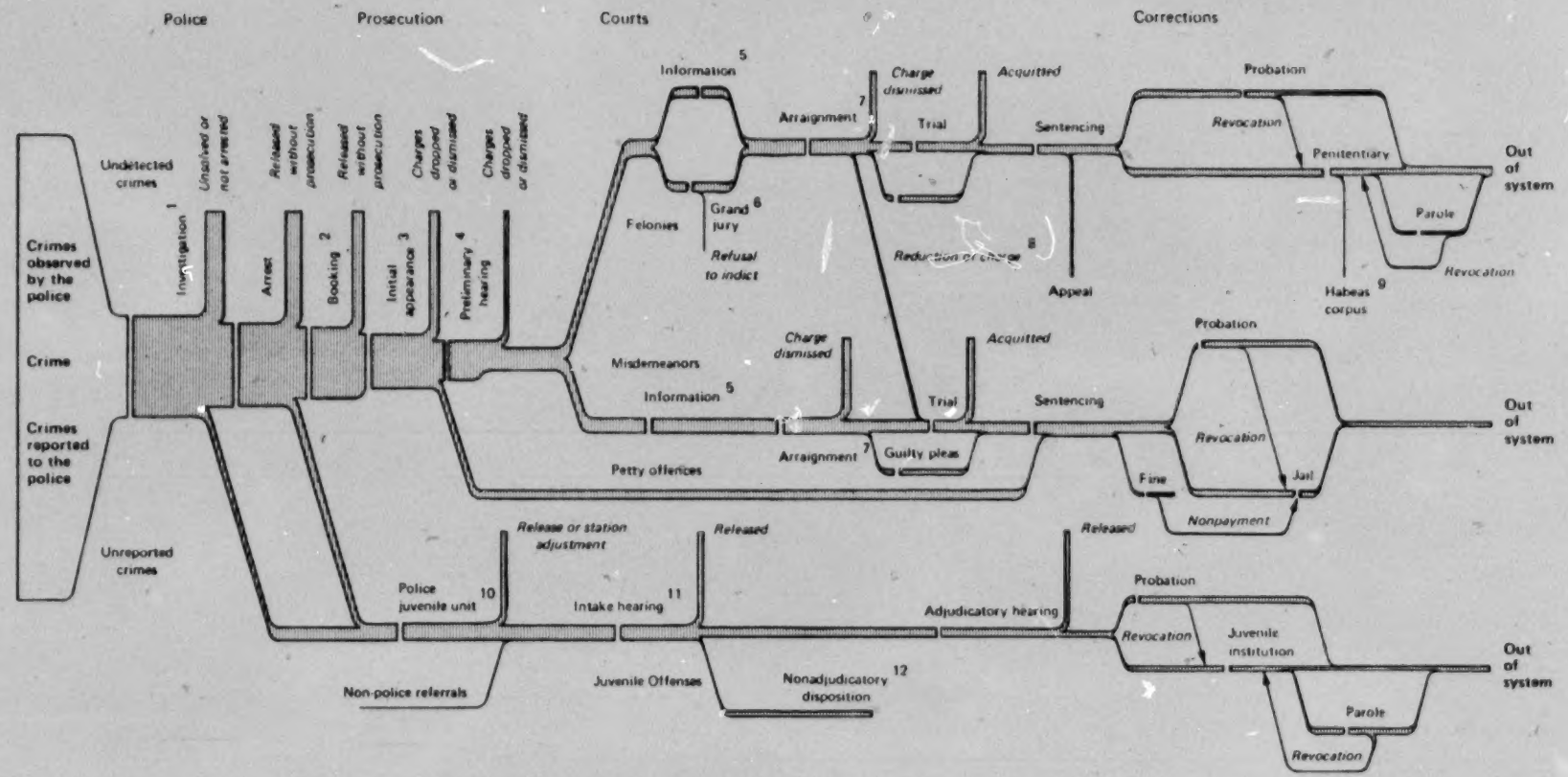
- Interview police officers. Arrangements can be formally arranged through the police department or students can conduct informal interviews with police who patrol their neighborhoods and school by simply explaining their project and inquiring whether they can ask a few questions.
- Ride in police cars. Some communities have "ride-along" programs for teen-agers (while others strictly forbid the practice). Students can inquire whether their department has such a program.
- Read about police work in the library. Some particularly good books on the police, all of which are in paperback, include:

  The New Centurions, by Joseph Wambaugh (Dell)

  City Police, by Jonathan Rubinstein (Ballantine)

  Behind the Shield: The Police in Urban Society, by Arthur Niederhoffer (Doubleday Anchor)

  Serpico, by Peter Maas (Fawcett)
- Interview people who have been arrested or neighbors, relatives, and friends who have had occasion to make use of police services in any form.
- Ask the police department for any literature it dispenses to the public that describes police work.
- Observe police officers in action on the street as they direct traffic, ticket parked cars, or patrol a neighborhood on foot. Ask a police officer patrolling a neighborhood if he or she minds if you "tag along" just to observe.



1 May continue until trial.

2 Administrative record of arrest. First step at which temporary release on bail may be available.

3 Before magistrate, commissioner, or justice of peace. Formal notice of charge, advice of rights. Bail set. Summary trials for petty offenses usually conducted here without further processing.

4 Preliminary testing of evidence against defendant. Charge may be reduced. No separate preliminary hearing for misdemeanors in some systems.

5 Charge filed by prosecutor on basis of information submitted by police or citizens. Alternative to grand jury indictment; often used in felonies almost always in misdemeanors.

6 Reviews whether Government evidence sufficient to justify trial. Some States have no grand jury system; others seldom use it.

7 Appearance for plea; defendant elects trial by judge or jury (if available); counsel for indigent usually appointed here in felonies. Often not at all in other cases.

8 Charge may be reduced at any time prior to trial in return for plea of guilty or for other reasons.

9 Challenge on constitutional grounds to legality of detention. May be sought at any point in process.

10 Police often hold informal hearings, dismiss or adjust many cases without further processing.

11 Probation officer decides desirability of further court action.

12 Welfare agency, social services, counseling, medical care, etc. for cases where adjudicatory handling not needed.

Activity #4

In conducting their research, students can try to obtain answers to several of the following questions:

1. How does the average police officer spend most of his or her day? Directing traffic? Ticketing cars? Mediating family and neighborhood disputes? Patrolling the streets? Apprehending criminals? Filling out forms? Walking "the beat"? Testifying in court? Questioning witnesses?
2. What are the different jobs police officers have? What's the difference between a detective and a patrol officer, for example?
3. What training is required to become a police officer? How is a police officer trained?
4. How are the responsibilities of city, county, state, federal, and other special police departments divided? Why are there so many different types of police departments?
5. Are there women in the police department? If not, why not? If so, are they treated any differently from men?
6. What is the percentage of minority police officers in the department? If it is not the same as the proportion the minority represents in the local community, why is there a discrepancy?
7. Do police officers have a different personality from other citizens? Is there a "cop mentality"? For example, are they more conservative, suspicious, or cruel? If so, were they that way before they became officers or did the job change their personalities?
8. Why do people become police officers? Is it because of the power it gives them over people? the opportunity to help people? the potential for excitement? the ability to carry a gun? the security of the job?
9. What services do police perform for citizens besides enforcing the law and deterring crime (e.g., giving directions, passing out hunting licenses, etc.).
10. What kinds of corruption take place in police departments, what seems to be responsible for corruption when it occurs, and what can be done about it?
11. Under what circumstances can police make an arrest?

(b) Prosecution: Students can research careers as prosecutors in the following ways:

- Interview prosecutors. Arrangements can be made through a citizen who has acted as a witness for the prosecution or by making an appointment to see a prosecutor.
- Sit in on several trials. Most are open to the public, although in some courts minors must be accompanied by an adult.
- Interview people in the community who have been prosecuted for crimes if who these people are is common knowledge.
- Read about prosecutors in the library. Some of the best books about and by **defense lawyers** contain excellent descriptions of **prosecutors.** Some particularly good books on prosecutors, all of which are in paperback, are:

  The Prosecutor, by James Mills (Pocket)

  My Life in Court, by Louis Nizer (Pyramid)

  The Defense Never Rests, by F. Lee Bailey (Signet)

  Justice Denied, by Leonard Downie, Jr. (Penguin)

In conducting their research on prosecutors, students can try to obtain answers to several of the following questions:

1. What, actually, does a prosecutor do?

2. What other jobs are there associated with the prosecution of crime?
3. How does someone become a prosecutor? What qualifications are needed? Why do people remain prosecutors only for a short while?
4. What pressures are there on prosecutors to win cases and have a good "record" of convictions?
5. What is "plea bargaining" or "copping a plea" and why are they used so extensively? How does a prosecutor decide what to charge a defendant?
6. Why are jury trials so rare?
7. What is the difference between a civil and criminal case?
8. What techniques does a prosecutor use in questioning witnesses?
9. What are pre-trial diversion programs, how do they work, what are their advantages, and are they successful?
10. What is "white collar crime" or economic crime and why is it prosecuted so infrequently?

(c) Courts. Students can research careers as court officials in much the same manner as they can research the job of prosecutor. In addition, many of the same research questions can be asked. Other relevant questions are:

1. Who, besides judges, work in courts? What are the functions of court clerks and bailiffs?
2. How does a judge determine a sentence? How much latitude does he or she have in setting the sentence? Why is there such a variety of sentences given for the same crime?
3. What is bail and how does a judge decide whether to require it and, if required, how much it should be? What are bail bondsmen and what do they do?
4. How are judges able to preside over a court and at the same time campaign for re-election?
5. What are some of the more important constitutional issues that judges have to decide?
6. What is the court structure in the state: what is the difference between municipal, county, superior, district, supreme, etc., courts?
7. What do probation officers do? What is probation?

(d) Corrections. Students can conduct research into the correctional system in a number of ways.

- Arrange interviews with prison guards and other correctional staff by contacting the nearest prison administration office.
- Arrange a tour of a prison. Many prisons offer such tours for students who are accompanied by an adult. Students can enlist the services of a parent to act as chaperon.
- Read about prisons in the library. Some particularly good books describing prisons, all in paperback include:

  Kind and Usual Punishment, by Jessica Mitford (Vintage)

  My Shadow Ran Fast, by Bill Sands (Signet)

  Birdman of Alcatraz, by Thomas E. Gaddis (Signet)
- Write for information to prison guard associations and request a complimentary copy of their journal or association newsletter.

In conducting their research on correctional systems, groups can ask the following questions:

Activity #4

1. What jobs are there in corrections in addition to that of prison guard? What do prison psychologists, social workers, and administrators do?
2. What do parole officers do?
3. What are the peculiar satisfactions and frustrations a job in corrections must provide? Are guards frequently fearful, for example? Does power ever "go to their head"?
4. Does it take a special personality or certain personality traits to be successful and/or happy as a prison guard, parole officer, or probation officer?
5. What power does a prison guard have? Do all guards carry weapons?
6. How frequent are prison riots? What seems to cause them? How are they handled?
7. Prisoners seem to be able to obtain weapons and drugs in many prisons. How are they able to do this?

After conducting their research, each group analyzes its findings and prepares a report to the class which discusses what careers in the criminal justice system component it studied are like and what specific criminal justice tasks its component is responsible for. Each group also prepares a brief role play of one or more of the activities its component engages in. For example, groups who researched law enforcement can role play a police officer giving testimony in court, arresting an alleged criminal, or mediating a family dispute. The "prosecution groups" can role play a prosecutor questioning a witness or plea bargaining with a defendant or a defendant's lawyer. The "court groups" can role play a judge setting bail or sentencing a guilty party. Finally, the "corrections" group can role play a prison guard coping with an angry inmate, a parole or probation officer confronting a parolee or probationer with having violated his or her parole or probation terms, or a probation officer recommending leniency or stringency to a judge about a particular criminal. In fact, the class could role play all the steps a person is likely to go through as he or she is processed through the criminal justice system. The previous chart can be used to facilitate this exercise, while one student plays the arrestee/defendant/inmate/parolee and moves from group to group being "processed" through the system.

Useful Prior and Subsequent Activities:

- Students can invite prisoners' rights committees and the American Civil Liberties Union to class to comment on their reports and role plays.
- Students can invite to class any of the individuals they interviewed in the course of their research for a class discussion.
- Students can research the job of criminal defense lawyers.

Resources: Resources for specific topics and components of the criminal justice system are provided above in the text. Some general studies of crime and the criminal justice system, all of which are in paperback but are only second-hand accounts, follow:

- **Crime in America,**
  by Ramsey Clark (Pocket Books)
- **The Challenge of Crime in a Free Society,**
  by the President's Commission on Law Enforcement and Administration of Justice (Avon)
- **Why Justice Fails,**
  by Whitney North Seymour, Jr. (Morrow)
- **Our Criminal Society,**
  by Edwin M. Schur (Spectrum)

- **Liberty under Law:**
  Case Studies of the Basic Principles of the Bill of Rights,
  American Education Publications, Education Center,
  Columbus, Ohio 43216
- **The Lawsuit,**
  Xerox Corporation,
  American Education Publications,
  55 High Street,
  Middletown, Conn. 06457
- **Justice in Urban America** series,
  Houghton Mifflin,
  110 Tremont Street,
  Boston, Mass. 02107

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Newscaster
- News Editor
- Video Equipment Specialist
- Audio Equipment Specialist

SOCIAL STUDIES RELEVANCE:

- Citizenship
- American History
- World History

Activity #5

Subject Area:

Social Studies

THE SIX O'CLOCK NEWS

Capsule Activity Description:

Students study then produce a news broadcast.

Teaching Prerequisites:

materials needed: recording equipment or props (optional)
contacts with community: tour of television or radio studio
approximate preparation time: 1-2 hours
approximate class time: 3-6½ classes

Social Studies Objectives:

to learn how the news is prepared and disseminated by the mass media; to develop the skill of critically evaluating news sources; to research one or more specific historical events of the teacher's or students' choice.

ACTIVITY

The purpose of this activity is to combine a social studies view and career education view of the broadcast industry. There are two parts to this activity: a field trip to a television or radio station and a simulation of a news broadcast.

You can easily integrate the activity into any part of a history course if you select Option One in which students produce a dramatization of an historical event, such as the Boston Tea Party, life on a Southern slave plantation, a Cabinet meeting on the Cuban Missile Crisis, or the Lincoln-Douglas Debates. The activity can also be used whenever you take up the topic of propaganda or the media in a citizenship course.

In the first part of the activity, students tour a local television or radio station. If a tour cannot be arranged, you can substitute a guest speaker. Before taking the tour, students develop a list of ques-

tions they want to ask and observations they want to make centering around how the news is produced; that is, how the actual words and text are written and edited and how the audiovisual parts of the presentation are produced. Sample questions students can ask follow.

1. What are the specific steps by which a news story progresses from an historical event to a news item on television (or radio)?
2. Who is responsible for doing each task?
3. Who decides what events should be written about, photographed, and broadcast?
4. What guidelines are followed in writing the news to ensure that the information is presented as objectively as possible? What guidelines are followed, for example, to prevent sex, ethnic, class, religious and political biases?
5. Is there significant minority, political, religious, and sex representation among the staff producing the news programs?
6. How do you decide where and how often to insert commercials?
7. How do you handle the time pressures—emotionally and operationally?

To prepare for the field trip, students spend several evenings prior to the tour watching or listening to the news broadcast of the station they will visit. This will ensure advance familiarity with the station's programming pattern and product. Contacts can be made with stations either through school officials or parents who know appropriate people to talk with, or by calling the stations directly and asking for the public relations department.

After the tour, the class develops a chart of the steps involved in producing a television or radio news program. The chart is duplicated and each student is given a copy. Students can then begin to develop their own news program.

Before the newscasts are developed and presented, students develop an observation check list for students who will be observing the newscasts to fill out during and after each presentation. A sample observer check list follows:

OBSERVER CHECK LIST

1. Is the newscast too slow or too fast? slow ☐ fast ☐
2. Is the newscast hard to understand or poorly organized? hard to understand ☐ poorly organized ☐
3. Is the newscast leaving out important parts of the event it is describing? no ☐ yes ☐ (Describe these missing parts after the newscast.)
4. Is the newscast spending too much time on certain things and not enough time on others? no ☐ yes ☐ (Describe this unbalanced treatment after the newscast.)
5. Is the newscast editorializing—that is, giving opinions rather than facts? no ☐ yes ☐ (Keep a record below of examples of editorializing.)

6. Is there any bias shown? no ☐ yes ☐
   If so, in what areas: sex ☐ political ☐ ethnic ☐ geographic ☐ religious ☐
7. Are there any instances of propaganda taking place? no ☐ yes ☐ If so, check in what areas:

1. **Bandwagon:** Language is used that suggests that 'everyone' or 'all the people' are doing it or using it. The listener doesn't want to be left out, or does not want to appear 'out of it.' ☐
2. **Glittering generality:** A report uses words like 'best,' 'the only,' and 'great.' ☐
3. **Humor:** Jokes are made at the expense of someone being quoted or filmed. ☐
4. **Statistics:** Newscasts often leave out contingencies or variables such as who conducted the study or what kind of people were polled. ☐
5. **Cardstacking:** Giving one-sided portrayals of the issues—all the good parts, for example, and none of the bad. ☐

8. Do the "newscasters" seem to be enjoying their work or are they bored or nervous?
   enjoying ☐ bored ☐ nervous ☐ excited ☐

There are many formats and styles the students' newscast simulation can take depending on the amount of time you have to spend on the activity and the availability of audiovisual facilities. Ideally, several small groups of students videotape their own separate news broadcasts and compare and analyze the results. Where this is not feasible, other alternatives include small groups preparing a newscast, which they then role play in front of the class as if it were an actual newscast setting, or the class divides into small groups, each of which is responsible for preparing **part** of a single newscast which the class can then present to the school or to another class. In addition, a radio broadcast can be simulated by using tape recorders or simulated with an imaginary microphone.

There are at least three options you and your students can consider in preparing their newscast. Different groups can all choose the same option, or they can pick the option which intrigues them the most. A description of each option follows.

Option One: Newscast of a Past Historical Event

This method, similar to the television show "You Are There," requires students to research an historical event (which they may have already done as part of your American history course) in enough depth so that students can role play the historical characters and replicate the event. Different groups of students can research and present different historical events and compare results. Two or more groups can also research and present the **same** historical event and **still** compare the results. The latter approach enables the class to learn how the news can distort reality, because no two groups are likely to give identical presentations even of the same historical event. The class can then discuss what the differences were, why they occurred, what implications these differences have for our ability to learn about historical events as they "really" occurred, and what these differences indicate about whether newscasts can present the "absolute" truth about an event to the public.

Once the class or groups understand "their" historical event and its significance, they can begin work on:

- writing the script or outlines for the actors and narrators to use in presenting the story;
- producing props, costumes, audiovisual materials, and other paraphernalia to go along with the presentation; and
- practicing the presentation.

This preparation can occur either during your class, during study halls and free periods, or before and after school. However or whenever it is done, instruct and remind students that their objective is to present as accurately as possible what happened on a given historical occasion. As an alternative approach, the groups can also develop a second or third ending to the event to illustrate other possible ways the event might have terminated. Discussion can then follow on why the event ended in the way it did and not in one of the alternative endings the students presented.

Activity #5

Option Two: Newscast of a Current News Event

Unlike Option One, this option consists of narration only, whereas Option One also involves simulation of an event. For Option Two, students can write the text for a newscast based on:

- world or national news obtained from weekly news magazines and newspapers;
- local news events, reviewed either in the community newspaper or, preferably, by observing an event in the community as it occurs—for example, a demonstration, hearing, meeting, speech, or athletic event; or
- school news, such as a sports event, fight, new course being offered, disciplinary procedure, unusual class activity, or cafeteria incident.

Option Three: Newscast on Fictional or Future Event

In this option, students create an event, treat it as if it actually occurred, and present a newscast describing it. Students can also select a current event that has been taking place for some time (e.g., school busing controversy, civil rights issue, election campaign), project a likely ending for the event, and use this predicted outcome as the basis of their newscast. In this option, students can combine strict news narration with simulated "film clips" of the event being described.

When the newscasts are to be presented, you can invite other classes, teachers, school administrators, and local news media professionals to observe. You can also present the newscasts in an assembly for the whole school.

After the newscasts have been presented, students review their observation check lists and discuss the results, treating one or more or the following issues:

1. Was the news presented accurately?
2. Was there sex, political, religious, geographic, or ethnic bias shown? For example, did the newscasters make fun of small town or rural life?
3. What is propaganda? Were there any examples of propaganda in the newscasts?
4. What is "editorializing" and did it occur? For example, did any of the newscasters indicate they agreed or disagreed with something that was said or happened?
5. When issues were discussed in the newscasts, were all sides (not just the proverbial "both sides") presented?
6. What jobs were involved in producing the newscasts?
7. What are some of the emotional satisfactions of these jobs, for example, the excitement and sense of power talking to an audience; the opportunity to travel about interviewing people; the power of deciding what news items are broadcast?
8. What skills are needed to perform these jobs?
9. What did the newscasts indicate about the historical event(s) they described which you did not know before?
10. Do you think that newscasts present the news accurately? Do you think historians present the past as it "really" happened? What are the difficulties in recording and presenting the "truth"?
11. What kinds of pressures operate on people in the news media—pressures for accuracy and of time, for example? How can time pressures interfere with accuracy? How can time pressures affect employees' job satisfaction and performance? Why do some people like and thrive on such pressure?

Useful Prior and Subsequent Activities:

- Students can develop and then add to their newscasts a "station editorial" about the event described. Other groups can act as "responsible opposing spokespersons" and present rebuttals during the "next night's" newscast.
- A copy of the newscast (in writing, audiotape, or videotape) can be sent to a local news station for evaluation.
- Students can observe real television news programs, fill out their observer check lists as they watch, and compare and discuss their results the following class.

Resources:

- Society of Television Pioneers
  P.O. Box 1475
  Lubbock, Texas 79408
- National Association of Broadcasters
  485 Madison Avenue
  New York, New York 10022
- National Association of F.M. Broadcasters
  420 Madison Avenue
  New York, New York 10017
- National Broadcasting Company
  30 Rockefeller Plaza
  New York, New York 10020

Comments from Teachers and Students after Using this Activity:

OCCUPATIONAL FOCUS:

- Manufacturer
- "Blue Collar" Worker
- Assembly Line Worker

SOCIAL STUDIES RELEVANCE:

- American History
- Current Affairs
- Problems of Democracy
- Economics
- Sociology

Activity #6

Subject Area:

Social Studies

BLUE COLLARS IN THE FACTORY

Capsule Activity Description:

Students interview factory workers and study the manufacturing process.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with industrial workers; tour of industrial plants
approximate preparation time: 1-2 hours
approximate class time: 3-4 classes

Social Studies Objectives:

to learn about the history and organization of labor unions; to evaluate the extent and nature of "blue collar blues"; to understand the processes by which goods are manufactured and the role of industry in the nation's economy.

ACTIVITY

This activity is designed to enable students to learn about blue collar jobs, labor unions, and the manufacturing process. The activity can be conducted in two different ways. Small groups of students can specialize in different areas of a manufacturing industry and divide into as many groups for research as there are processes identified. You and your students, with help from an industry representative, if necessary, construct a list of processes to examine, such as:

- buying new materials
- transformation into product
- advertising and selling
- shipping (and receiving)

Activity #6

- administration
- research and development
- public relations

Each group would, in this option, investigate a different process within the **same** industry.

The activity can also be conducted with different small groups investigating **different** industries, without differentiating among the various processes within these industries. Which option you select depends on the way in which you want the activity to relate to your subject area and on the availability of appropriate industries to visit in your community.

The activity can easily be integrated into a number of social studies courses whenever one of the following topics is addressed:

- labor unions, historically and organizationally (American history, current affairs, problems of democracy, economics);
- "blue collar blues" (sociology, current affairs); and
- manufacturing and industry (economics, current affairs, problems of democracy).

The activity, with either option, has four major steps:

1. tour of plant;
2. interviews with representative workers;
3. observation of plant operations and/or volunteer work; and
4. discussion of findings and observations.

You and your students can identify industries to contact for tours, interviews and observations through parents, relatives and friends who may be employed in one of these plants or who know people who are. You can also contact plant personnel departments to make the necessary arrangements. Local service and fraternal organizations like the Lion's, Rotary Club, Moose, Masons, or Chamber of Commerce may also be able to help you. When you do make your arrangements, ask the industry contact whether there are any legal or insurance problems having students tour and observe the plant, especially in plants where industrial accidents are possible.

The class breaks into small groups and, before taking their tour, the groups develop a list of items they want to observe, such as work conditions, tasks being performed, worker attitude, supervisor attitude, opportunity for initiative, special equipment, and facilities (rest rooms, cafeteria, vending machines, etc.). The tour is designed to enable students to gain a general overview of the plant's operations.

Having completed the tour, the small groups develop questionnaires to use for the next step of the activity: interviews with representative workers. The questions focus on three areas: (1) nature of the jobs performed; (2) the nature of the manufacturing process and industry; and (3) the function and role of the union. Sample topics for use in the questionnaires follow.

- **Background:**
  - Job title
  - Years on the job
  - Last grade completed in school
  - Special training, if any, received

- **Job:**
  - What tasks are performed
  - Hours, shifts
  - Salary range
  - Benefits of the job
  - Dangers in the job
  - Special skills needed for this job
  - How job was obtained
  - How should others go about getting such a job

- **Attitudes:**
  - Why did you choose this job?
  - What do you like about it? Why?
  - What do you dislike about it? Why?
  - If you could choose any job in the world, what would it be? Why?
  - Do you like working with "your hands"? Why?

- **Union:**
  - Name
  - Membership dues and responsibilities
  - Services it performs
  - Eligibility requirements
  - Type of shop (closed or open)
  - Changes over the years
  - Union-company disagreements

- **The Manufacturing Process:**
  - How are the products made in the plant?
  - Who takes responsibility for what parts of the process?
  - Is more automation planned?
  - Does automation interfere with quality?
  - Are there conflicts between quantity and quality concerns?
  - How is the cost of the final product determined?
  - What safety precautions are taken to protect workers? Are these adequate?
  - How does this particular process relate to the other processes in the plant?

Students then conduct their interviews, either as small groups or individually, and compare their results. On the basis of their interview results and tour of the plant, each group develops a final, highly specific list of items it wants to observe as part of the next step of the activity, observation and volunteer work. Examples of specific observations to make during this part of the activity could be to watch for signs of hostility between workers and supervisors and attempts by workers to avoid their work in subtle ways (e.g., by frequently going to the restroom).

The purpose of the observation and volunteer work is to obtain a "feel" for the plant and the jobs by closely observing and/or engaging in one of the jobs.

Arranging to do volunteer work may be difficult, if not impossible, due to union, safety, and child labor law regulations. However, the benefits to be gained from such first hand experience can outweigh the problems involved in attempting to make the necessary arrangements.

Activity #6

Finally, when the period of observation and volunteer work is over, each group gathers together to compare the experiences among its individual members and prepare a report on them to share with the rest of the class. Discussion follows on (1) why "blue collar" workers are often dissatisfied with their jobs (e.g., boredom), (2) what benefits unions provide their members and how they operate (e.g., pensions), (3) what the common components are involved in manufacturing products (e.g., automation), and (4) how students **felt** doing "blue collar" work (e.g., "like a machine").

Useful Prior and Subsequent Activities:

- Students can identify ways to improve "blue collar" working situations.
- Students can discuss ways to improve the industry's operation from a cost-benefit point of view.
- A management and/or union official can be invited to class to react to the students' reports and discussion.

Resources:
- "Night Shift," Sylvia Plath (poem)

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Military Positions

SOCIAL STUDIES RELEVANCE:

- Citizenship
- Current Affairs
- Problems of Democracy
- American Government
- American History
- World History

Activity #7

Subject Area:

Social Studies

UNCLE SAM WANTS YOU

Capsule Activity Description:

A small group of students researches through reading or interviewing the type of careers available in the military and the advantages and disadvantages of a military career.

Teaching Prerequisites:

materials needed: none
contacts with community: optional and arranged by students
approximate preparation time: ½-1 hour
approximate class time: 1-1½ classes

Social Studies Objective:

to identify the role of the armed forces in a democracy in terms of national defense, budgetary priorities, and personal conscience.

ACTIVITY

One or more small groups of students or one or more individual students research careers in the military by identifying people to interview and places to visit, developing questions to ask and lists of things to observe, and discussing their findings in terms of both military careers and social studies issues.

The activity can be easily integrated in a number of social studies courses and in a number of places within each of them.

- The activity can be used in an American history course when discussing wars in which this nation has fought, military influence on civilian decision-making (e.g., the Bay of Pigs, hostilities against American Indians), the growth of defense spending, and the role of the draft in war and peace.

Activity #7

- In courses of problems of democracy and current affairs, the activity can be implemented when discussing the size of the federal budget, the role of the military in government decision-making, discrimination against and/or preferential treatment for minorities and women, amnesty for deserters, and a volunteer vs. a conscript army.
- A discussion of the allegedly distinctive personality of army careerists and recruits and of discrimination against women and minorities in the armed forces in a psychology course could benefit from use of this activity.
- Finally, citizenship classes can use the activity to discuss the civic duty of citizens to their country in terms of military service in war and peace.

When you use the activity, begin by explaining to students its relevance to your course and to the particular social studies topic you have been or will be discussing. Then students in small groups or individually identify appropriate and accessible groups, places and/or individuals whom they would like to interview about careers in the military. Possible activities and respondents include:

- writing to the information offices of the various military branches;
- interviewing local army, navy, etc. recruiting officer(s);
- examining army, navy, etc. literature available from recruitment officers, the Pentagon, or the school guidance office;
- interviewing career military persons and enlisted persons;
- interviewing teachers and others in the local community who have served in the military;
- interviewing members of and/or writing to pacifist and other anti-military groups, such as the American Society of Friends (Quakers);
- visiting a military base or National Guard unit and observing typical military personnel performing their daily tasks; or
- interviewing primarily women in the military.

Students can identify these individuals, groups, and sites which might be responsive to their requests by contacting local armed forces recruiters, pacifist groups, teachers who are veterans, and by checking the Yellow Pages.

Once students have identified whom they want to contact and secured these individuals' and groups' permission to talk with and/or observe them, students develop questions to ask these respondents and things to observe at the sites. Sample questions students can ask include the following:

1. What are the different branches of the military and what are the different jobs that career military personnel engage in?
2. What prior qualifications are required for these jobs?
3. What opportunities are there for careers for women and minorities? Is there discrimination against or preferential treatment for women or minorities? Are there any particular advantages or disadvantages in a military career for women or minorities?
4. What are the salaries in military career? What is the promotion schedule like? What kind of job security is there?
5. What are the fringe benefits of a career in the military, such as medical, educational, travel, retirement, job training, vacation, and sick leave? Is sick leave and/or leaves of absence for women who have children provided? How do these benefits compare with fringe benefits in other occupations?

6. What are the intangible rewards of a military career—for example, are there opportunities to exercise leadership? What are the intangible drawbacks—for example, is there lack of autonomy?
7. What are the disadvantages to a career in the military? Is much unpleasant travel or moving about the country or world required? Are employees liable to face conflicts between obeying orders and their conscience? Are there unusual health problems associated with a career in the military, such as meningitis, venereal disease, and problem drinking? Are loneliness and/or boredom occupational hazards of a military career?
8. What are the personality characteristics (obedience?) and skills (leadership?) necessary to have a successful career in the military?
9. Which is preferable and why: a volunteer or conscript army?
10. Should amnesty be provided for deserters? What effects, if any, might an amnesty program or the lack of one have on current military personnel in terms, for example, of morale?

An observation instrument students might develop for taking notes while watching military personnel on the job might include the following items:

1. List below the general tasks which the observed person(s) is (are) engaging in (e.g., filling out forms, providing training, etc.).
2. List below the recreational, leisure, and social activities the person is engaging in that are made possible by the job (e.g., afternoon softball game, good conversation, etc.).
3. List other people with whom the observed person has contacts and note briefly the nature of those contacts (e.g., supervisors or subordinates; following or issuing instructions).
4. Record whenever the person being observed seems to be feeling pleased or angry, happy or sad, overworked or underworked.

Groups then divide up responsibility for the research, develop questionnaires, interview guides, and/or observation instruments for each research task, and conduct the research, taking complete notes during all interviews and observations. (Students can also consider bringing along a tape recorder if they have obtained permission from the interviewee in advance to use one.)

After conducting the research, groups compare their findings and report them to the entire class. Discussion follows on one or more of the following career education and social studies issues:

1. How is defense spending allocated among the various tasks the military performs? Are these expenses necessary, desirable, or undesirable? Why? How can you tell?
2. Should there be a voluntary army in peace time or a draft? Why? Does having compulsory military service affect the quality or nature of military life differently than having an all volunteer army? If so, how and why? Why do people volunteer to enter a career in the military?
3. Is there a "military mentality"? If so, what is it? What personality characteristics, if any, seem to be associated with success and/or happiness in military careers? Are certain types of people attracted to or repulsed by life in the military? If so, what kinds and why?
4. Does life in the military exert any subtle or obvious changes on a careerist's personality? If so, what changes and how is that influence exerted?
5. Is there discrimination against and/or preferential treatment for women and/or minorities in the armed forces? If so, what is the nature of the discrimination or preferential treatment and why does it exist?

Activity #7

6. Should there be amnesty for war deserters? Why? What effect, if any, would this have on current military personnel?
7. What kinds of careers are available in the military?
8. What are the specific advantages and disadvantages of a career in the military?
9. What would one need to know about one's own personality and interests before choosing a military career?

Useful Prior and Subsequent Activities

- Groups can role play potential applicants for military careers discussing with an armed services recruiter or with a pacifist organization the types of careers available and their advantages and disadvantages.
- Students can research one or more of the many organizations devoted to peace, such as the United Nations, American Society of Friends (Quakers) and numerous less well known anti-war groups.
- Students can organize an interdisciplinary activity in conjunction with their English teacher in which they read fictional accounts of military life from (1) a literary perspective, (2) a social studies point of view, and (3) a career education interest. Examples of appropriate literature include:

  Norman Mailer, **The Naked and the Dead**

  Mikhail Sholokhov, **And Quiet Flows the Don**

  Alexander Solzhenitsyn, **August, 1914**

  Leo Tolstoy, **War and Peace**

  Stephen Crane, **The Red Badge of Courage**

  Ernest Hemingway, **A Farewell to Arms**

- Students can write a brochure on the advantages and drawbacks to a career in the military. After developing it, they can submit it to as many of the interviewed and observed individuals as possible, soliciting their comments and suggestions for revisions. Students can then revise the brochure and, through the use of school reproduction capabilities or free use of reproduction facilities by a local printer, produce copies for distribution to classmates and libraries.
- Students can invite guest speakers from among those people they interviewed or observed to answer questions from the class or to conduct a debate–for example, recruiters from different branches of the military service can compare their branches, or recruiters can discuss careers in the military with pacifists.

Resources: See the research methods outlined in the activity.

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Government Jobs
- Environmental Protection Jobs
- Civil Service Occupations

SOCIAL STUDIES RELEVANCE:

- Citizenship
- Current Affairs
- American Government
- Economics
- Sociology

Activity #8

Subject Area:

Social Studies

"BUREAUCRATS" IN THE GOVERNMENT

Capsule Activity Description:

Students interview employees in local government agencies and discuss what it is like to work in a "bureaucracy."

Teaching Prerequisites:

materials needed: none
contact with community: interviews with government agency employees
approximate preparation time: 1-2 hours
approximate class time: 1½ classes

Social Studies Objective:

to learn about the Civil Service system;
to understand the effects of bureaucracies on government policies and operations;
to learn about the constraints involved in implementing established government policies.

ACTIVITY

This activity is designed to enable students to explore the nature of governmental agencies, the Civil Service system, types of jobs available in government agencies, and the advantages and disadvantages to working for the government and in a bureaucracy.

The activity can be easily integrated into any of several social studies courses depending on the aspect of the activity which is stressed and the specific agency or agencies whose employees students will interview. For example, the activity can be used in a sociology course to illustrate the nature of bureaucracies. In a problems of democracy course, the activity is useful for illustrating the problems involved in transforming policy into action when bureaucrats are responsible for the successful implementation of agency guidelines. The specific agencies a class or group of students selects to investigate can also determine the course and part of a course into which the activity can be integrated; for ex-

ample: consumer, welfare, and other social service agencies into problems of democracy and current affairs courses; the Pentagon and State Department into citizenship and American history courses; housing agencies into sociology courses; legal and criminal justice agencies into student law courses; and tax and auditing agencies into economics courses.

Begin the activity by discussing with students definitions and connotations of the word "bureaucracy." The definition includes a group of people who are:

- nonelected, but appointed to their positions
- work for a government agency
- do specialized tasks
- follow specific rules or guidelines
- belong to a hierarchical authority structure.

The connotation of "bureaucracy" includes the notion of "red tape"—that is unnecessary delays, regulations, paperwork, confusion, and complexity—and the feeling of unnecessary size.

After this initial discussion, students break into small groups, with each group selecting one government agency in the community it would like to explore. Groups can explore different agencies or the same one. If there is a large agency in the community, the groups can investigate different components or divisions of the same agency. For example, one group can concentrate on the purchasing department, another on the service delivery component, and a third on the personnel services. Or, if the agency is concerned with education, for example, one group can research the adult education section, another the secondary school section, and a third the elementary education division.

Four to six weeks before conducting any interviews, the groups write to the agencies they have selected for general information on their activities, organizational structure, and job specifications. Groups can write both the local agency and its state or federal equivalent (e.g., the town, city, or county police department, the state police, and the Federal Bureau of Investigation). Groups request brochures and information packets describing the agencies. Each group also writes or telephones the Federal Civil Service Commission in Washington or the regional office for information about the nature of the Civil Service system. The address and phone number of the regional Civil Service Commission offices are in the white pages of the telephone book under "United States Government, Civil Service Commission." The address of the Civil Service Commission in Washington, D.C. is

Washington Area Office
U.S. Civil Service Commission
1900 E Street, N.W.
Washington, D.C. 20415

Each group carefully familiarizes itself with this literature when it arrives and then develops a series of questions it wants agency employees to answer. These questions revolve around three areas:

1. questions about Civil Service jobs in general and working in a bureaucracy in general;
2. specific questions about the particular jobs and working conditions available in the agency being visited; and
3. questions related to the subject area under study.

Examples of questions in the first category include:

- What are the ways in which you feel you are working in a bureaucracy, or don't you?
- What are the advantages and disadvantages to working in a bureaucracy and/or in a Civil Service job?

- What are the advantages and disadvantages in working for the government (or city, county, state, etc.) as opposed to working for a buinesss or on one's own?
- Bureaucracies are supposed to be too big and slow to act. Do you find this to be true in your agency? If so, what causes these problems? If not, why not?
- How much control do you have over what you do? What decisions can you make on your own?
- What is the "chain of command" in your agency? Who is "above" and "below" you? Do you have an organizational chart of the agency we can have?

Examples of questions about the specific jobs in each agency follow.

- What jobs and tasks are involved in this agency?
- What are the expected future needs of the agency?
- What are the job requirements for each job within the agency?
- What are the general salary ranges for the jobs; what are the benefits?
- What are the advantages and disadvantages of your job?
- Why did you choose this particular job?
- What specific skills and education are needed for your particular job?
- What are the advantages and disadvantages of your job?

Finally, students develop questions that relate to the subject area they are studying. For example, if a group is interviewing the local tax agency for an economics course, it will want to ask how tax increases and decreases are used to stimulate or dampen the economy, why there is an oil depletion allowance, what tax incentives there are for businesses and how they are supposed to operate.

Students interview two types of individuals in each agency: staff in the agency's personnel department and typical "bureaucrats." Students can arrange for the interviews in a variety of ways, including through parents, relatives or friends who work in an appropriate agency; through personal visits or phone calls to an agency's personnel department; and through an appropriate school official—for example, a principal or school superintendent may have connections with city, town, county, state, or federal educational, public safety and transportation agencies.

If on-site interviews prove infeasible, one or more "bureaucrats" can be invited to the class to respond to the students' questions.

After conducting the interviews, each group compares its results and develops a report which it presents to the class, responding to comments and questions from other students and you. In particular, students make comparisons to determine whether all "bureaucracies" operate in similar ways, what the common satisfactions and dissatisfactions are for most "bureaucrats," and what was learned about the subject area topic related to the agencies they visited.

Students also focus on **why** people take certain jobs—what they think they will like about them, including concern not only about the type of work involved and the salary, but also concerns about having job security, following in a parent's or role model's footsteps, being "desperate" for a job and taking the first opening available, having evenings and weekends free, avoiding or desiring a job that requires responsibility or initiative, or finding a job which offers the opportunity to exercise authority, leadership, or creativity.

Comments from Teachers and Students after Using the Activity

OCCUPATIONAL FOCUS:

- Politician
- Campaign Worker
- Elected Government Official

SOCIAL STUDIES RELEVANCE:

- Government
- American History
- Problems of Democracy
- Current Affairs
- Citizenship

Activity #9

Subject Area:

Social Studies

VOTE FOR US!

Capsule Activity Description:

Students volunteer to work for the election campaign of a candidate of their choice and report their findings and reactions to the experience.

Teaching Prerequisites:

materials needed: none
contact with community: campaign office
approximate preparation time: ½-1 hour
approximate class time: 1-3 classes

Social Studies Objective:

to investigate and experience the election campaign process on the grass roots level.

ACTIVITY

The purpose of this activity is to have the student experience the election process from the inside and to evaluate it both as a citizen and as a person looking at issues that could influence future career decisions.

The activity is aimed at both students who already understand the election system from the theoretical or "outside" vantage point and students who have had no contact, theoretical or otherwise, with American politics. The advantages of the exercise, for the student of American government, are obvious and places at which to integrate the activity in a government, American history, current affairs, and problems of democracy course are many. However, your school or parents may feel it is inappropriate for students to engage in politics, particularly if the campaign involves sensitive or explosive issues. At the least, you should inform administrators and parents of what you are doing and

make sure your students, without any suggestions from you, make the decision of which candidate to help.

As a project in your social studies course, students volunteer to help in a local election campaign office. This assignment is done after school or on weekends. While the minimum time spent would be a full evening or half of a day on the weekend, encourage students to spend as much time as his/her schedule allows. Try to have the students spread out throughout the community rather than inundate one campaign office for one evening only. A variety of locations would also produce a better sample of experiences.

Class conducts the activity in small groups or as individuals. Each group or students develops a list of observations to keep a written record of while doing the volunteer work. Things to observe can include, for example:

1. **Tasks performed:**
   - What do the people do? List all the things that you see being done.
   - What hours are involved? How many hours are normal? Are there shifts? How many people work per session?
   - How much activity revolves around use of the media—newspapers, television and radio?
2. **Rewards obtained:**
   - Is anyone being paid for their work? What tasks do the paid people perform? Are these tasks different from the tasks of the volunteer workers? Are the paid workers well paid? What is the proportion of paid workers to volunteer staff?
   - What personal rewards do the workers get? Ask several salaried workers and volunteer workers why they are working. Keep the answers of the paid workers separate from the volunteer workers, but do not record the names.
3. **Atmosphere of the office:**
   - List every word, especially adjectives, that you can think of that describes what you see and feel. Keep a notebook, piece of paper or index card available to record these words as they occur to you. Examples might be "tense," "relaxed," "pressured," "[illegible]," "jovial," or "tired."

Part of a sample record sheet might look like this:

Rewards obtained:

1. How many people are working? _____
2. How many people are being paid for their work? _____
3. What tasks do the salaried people perform? _____
   _____
   _____
4. What is the difference in the tasks between paid and volunteer workers? _____
   _____

5. What personal rewards do the salaried workers say they get from the work?
   Response 1 _____
   Response 2 _____
   Response 3 _____

   What personal rewards do the volunteer staff say they get from the job?
   Response 1 _____
   Response 2 _____
   Response 3 _____

Students not only engage in volunteer work but actively ask questions of both the other volunteers and the paid professional staff. Questions can include the following:

1. Why do people enter politics as a career? What satisfactions does it provide: money? power? opportunity to help society? fame? stepping stone to a better career (e.g., as a judge or corporation executive)?
2. Are there special pressures on women and minorities in politics? If so, what are they and how do these people cope with them?
3. What, precisely, are the jobs a career in politics offers **besides** holding political office?
4. What happens to campaign staff when the campaign is over?
5. What percentage of a politician's and his or her staff's time is spent campaigning? What campaign activities occur even when an actual election is not in the offing?

Students keep a written record of their observations and answers to their questions as they engage in the volunteer work (e.g., every night) in order not to forget any of the details.

After students have completed their volunteer work, they can engage in one or more of the following activities:

- Write a short essay on "Why I would (would not) like to be a politician (or campaign worker, or administrator, or press relations officer, etc.)." Students share their reports in small groups or with the class and compare their reasons for desiring or disliking a career in politics.
- Discuss on the basis of their observations and questions what seems to attract people into political careers, including desire for power, thirst for fame, intention to "do good," attempt to get rich, enjoyment of the social life, excitement of solving tough social and political problems.
- Identify the aspects of political campaigns which are not stressed or mentioned at all in "textbook" accounts of the political process, such as the social life, drinking, late hours, frayed nerves, decision-making process, or political intrigue. Discuss why elements may be understated or left unsaid in written accounts of political campaigning.
- Identify and discuss the different types of jobs available to people in politics both during campaigns and between campaigns, such as press relations officer, administrative assistant, liaison persons, and advisors.
- Discuss the role of the mass media in relation to the candidates' personality and platform.
- Analyze their findings not only with random comparisons among the groups, but also by comparing experiences and information gleaned between parties (Democratic vs. Republican vs. Independent), type of campaign (city vs. state vs. federal vs. county), or type of office being sought (mayor, city council, senator, sheriff, judge, etc.). Discussion can focus on whether the political

process varies depending on these variables and on whether a career in politics would be different depending on which of these variables were operating.

- Discuss the ethical issues involved in occupations associated with politics. For example, what compromises must politicians and their staff make between means and ends? Should a press officer lie?
- Discuss whether women and/or minorities in politics are treated differently than men by their colleagues, and whether they must act differently from male or non-minority politicians and political staff.
- Discuss what kinds of persons are attracted to careers in politics and ways in which political careers may influence personality. For example, is there truth to Lord Acton's famous dictum that "Power tends to corrupt; absolute power corrupts absolutely"?

Useful Prior and Subsequent Activities:

- Students can set up and staff their own campaign headquarters for candidates of their choice in the school prior to or during an election campaign and either organize a mock election in the school or seriously try to influence people of voting age in the school (older students, faculty, school administrators).
- Students can canvass their community prior to the election to learn how the voters feel about the candidates and issues and to try to predict who will win and why. A similar study can be made after the election.
- Students can ask candidates to respond to questions based on the issues either by letter or coming to class. If they come to class, questions can also be asked about politics as a career. Students can request the candidate bring some of his or her staff who hold other jobs to explain what a career in politics offers. (Be careful to invite candidates from all the different parties to maintain impartiality.)

Resources: There are many books on the political process in America. Two useful paperbacks are:

- **Practical Political Action, a Guide for Citizens,**
  by The Lincoln Filene Center for Citizenship and Public Affairs,
  Houghton Mifflin, 1970.
- **Politics: The American Way,**
  Abraham Ribicoff and Jon O. Newman,
  Allyn and Bacon, Inc.

Three novels which describe election campaigns follow.

- **The Last Hurrah,** Edwin O'Connor
- **Facing the Lions,** Tom Wicker
- **All the King's Men,** Robert Penn Warren

Comments from Teachers and Students after Using the Activity

OCCUPATIONAL FOCUS:

- Social Worker
- Social Service Agency Employee

SOCIAL STUDIES RELEVANCE:

- Sociology
- Current Affairs
- Problems of Democracy
- Economics
- Government

Activity #10

Subject Area:

Social Studies

HOW CAN I HELP?

***Capsule Activity Description:**

Students role play a case worker and a client during a crisis situation.

Teaching Prerequisites:

materials needed: role profiles
contacts with community: visit to social service agency (optional)
approximate preparation time: ½-1 hour
approximate class time: 1-2 classes

Social Studies Objective:

to experience the operations, on a personal level, of a social service agency to increase awareness of the operations of the welfare system.

ACTIVITY

This activity is designed to have students experience through a simulation or role play, the interpersonal dynamics of a social service agency. The activity focuses on both the feelings of the welfare client who seeks help, not sure whether he or she will be accepted or rejected, and on the feelings of the social worker who wants to help the client but must work within the structures of the agency. For students who might be considering a career in a helping field, the exercise can expose them to some of the realities of working in a social service agency.

The activity can bring many insights into any course that discusses the socio-economic problems of the

*The core idea for this activity was developed by Patrick Weagraff. We are grateful for permission to use it. It is part of *Job Cluster Curricula for Public Service Occupations at the High School Level*, State Board for Vocational Education (Sacramento, California: 1973) which may be ordered from the State Board for Vocational Education, Sacramento, California at no cost.

poor or working class. It can be easily integrated into current events, sociology and problems of democracy courses, as well as into economics and current American history; for example, when a current events or problems of democracy course treats the issues of escalating welfare costs, who should pay them, and what welfare benefits should be offered; when a sociology course discusses the nature and causes of poverty; when a government or economics course delves into the theory and practice of laissez-faire vs. socialism vs. "the welfare state"; or when an American history course treats the origins of social welfare legislation in the New Deal or a European history course comes to the social legislation of Germany at the end of the nineteenth century.

Before engaging in any role plays, students may have to obtain some basic information about social service work and social worker/client interviews by interviewing or inviting to class one or more social workers. Students can make the necessary arrangements for interview or visit through the school guidance department. Students can ask the social worker(s) such questions as:

1. Who are your clients? Who is eligible to see you?
2. Why do they come to see you? What are their problems?
3. What are the specific services you provide your clients?
4. What are the incentives for clients to tell the truth or to lie about themselves or their families?
5. What are the most common and most serious abuses of the social service system for which you work? What factors make it difficult to reduce these abuses?
6. What other social service jobs are there in the agency or organization for which you work? How do these jobs differ from yours?
7. What else do you do in addition to counseling clients? How much paperwork must you do, for example?
8. What training did you need for your job? Where did you get it?
9. What are the satisfactions and frustrations in your job?
10. Why is there a stigma against men becoming social workers? How do men in the field attempt to cope with the stigma?
11. Why are people attracted to social work? What psychological rewards does the job provide?

Before engaging in the role play, consider who among your students may be offended or hurt by playing parts which may upset them because of unemployment or other economic and emotional problems in their families. You will want to accept only volunteers for the parts and be careful to "cut" the action if you notice that a player is becoming too emotionally involved in his or her part. Provide a brief lecture on how unemployment, underemployment, and other problems associated frequently with the poor are not signs of moral failure or laziness but reflections of a flawed economic and political system.

A sample scenario and role profiles follow.

Setting:

A social service agency office. The building is old but clean. Furniture is worn and institutional. The social worker sits behind a desk. The client sits on a hard wooden chair on the side of the desk. There is no privacy since the desks of all case workers are in this one crowded room and the waiting area for the clients is also in the same room.

Role Profiles:

Social Worker Role: You are Joseph Friendly, a social worker for the Department of Welfare. You

are 26 years old, with a Masters Degree in Social Work. You are a veteran of the Viet Nam war and used the G.I. Bill to get your degree. Your father wanted you to work in his company where your salary would be at least twice what you are now getting, but you don't like the business world with its hectic pace. Recently, however, the "red tape" in your agency has been bothering you; you have even been considering quitting and joining your father's business. This morning you are particularly upset. You just received a notice that effective immediately you must fill in a ten page form for each client who wants more money. You think that this is unnecessary paperwork, but you must follow this new procedure. You look up from your desk and see Mary Sad, one of your clients, coming toward your desk. You wonder what her problem is this time. Maybe this time you'll try to get her a job.

Client Role: You are Mary Sad, 34 years old. You are a high school dropout who was married at 15. You have six of your own children at home plus one child from your oldest daughter, Sally. Your oldest, Sally, is 18 and your youngest is only 2 years old. Your husband died a year ago in a "hit-and-run" accident. The funeral costs used up all his life insurance and all your savings. You would like to work, but your children are too young for you to leave them. Sally, since having her baby, has been very sickly. Medical expenses, rent, food and clothing bills have overwhelmed you. Three days ago you went to the Social Service Agency for the first time. Joe Friendly, your case worker, arranged for you to receive money to pay for the rent. However, the check hasn't arrived yet and the landlord says he will evict you if he doesn't get paid today. You have decided to come to see Mr. Friendly again, since he is the only person that you can turn to. You are next in line to see Mr. Friendly and you try to smile as you approach his desk. You wonder how you will persuade him to help you.

After the role play, the class discusses what the role play revealed about the satisfactions and frustrations of being a social worker—for example, the paperwork, limits on the potential for providing assistance, the gratification of providing help, and so on. Students also discuss what the role play indicated about the social welfare system in America in terms of the benefits it does, can, and should provide, what responsibilities should be placed on welfare recipients, what seems to be responsible for poverty in America, and how and by whom the poor can be helped to escape their poverty. Finally, students discuss the findings they experienced role playing the parts and observing the action—emotions such as helplessness, anger, frustration, and relief.

You and your students can then develop additional scenarios and profiles to implement. Sample scenarios can include:

- social worker interviewing applicant who wants to sign up for welfare, unemployment, Medicare, and/or Medicaid
- social worker visiting home of welfare client to make sure the conditions of receiving welfare are being met
- social worker interviewing a problem drinker seeking help or the spouse or child of an alcoholic seeking help both for him or herself and for the alcoholic
- social worker talking with a client whose mother, father, or other relative has had a nervous breakdown and needs short or long term assistance (hospitalization, therapy, medication, nursing, etc.)
- employee of governmental agency responsible for housing talking with poor citizen complaining about a landlord who refuses to make needed repairs in the apartment building
- psychiatric social worker interviewing a new client to diagnose what his or her emotional problem is and to decide on the best type of treatment(s) given that person's particular illness and financial status
- social worker helping a parent cope with a son or daughter who is beginning to engage in acts of juvenile delinquency

Activity #10

- social worker working with a juvenile delinquent.

Although these suggested scenarios are written from the perspective of the social worker, point out to students that they must also be observed **from the point of view of the client** who may be facing a hostile, indifferent, callous, nosy, or inefficient social workers and/or bureaucracy.

Useful Prior and Subsequent Activities:

- Students can visit a social service agency either before or after the role plays.
- Students can invite a social worker to be present during the role plays and to comment on them afterwards.
- Students can discuss the problems involved when lower class clients have to deal with middle class social workers and vice versa, or when clients who are members of minority groups must seek help from white social workers and vice versa.
- Students can engage in volunteer work with social service agencies and keep a diary of their feelings and observations.

Resources: Two useful films on social work which appear occasionally on television are "Claudine" and "A Thousand Clowns."

For further information, students can write to:

- National Association of Social Workers
  2 Park Avenue
  New York, N.Y. 10016

Comments from Teachers and Students after Using the Activity:

Section Two: ENGLISH

1. ACTIVITIES SUMMARY

This section of the manual contains the following ten activities, sequenced very generally from easiest to most difficult.

11.* **JOBS IN FACT AND FICTION:** Students prepare a reading list of literature relating to an interesting career and provide a report on the contents.

12. **THE NEWS ON SEX AND RACE:** Students evaluate advertising and television programs and their relationship to ethnic, age, sex, and geographic stereotyping.

13. **ACT NOW TO PLAN YOUR CAREER:** Students perform a socio-drama and the class reacts.

14. **JOBS, ETHICS, AND LIFESTYLES:** Students role play conflicts arising from a career lifestyle.

15. **QUESTIONS ABOUT JOBS:** Students simulate the job of survey designer, pollster, and journalist by developing and administering a poll and then writing a newspaper story on the responses.

16. **ENGLISH ON THE JOB:** Students determine how English skills are used in different occupations by interviewing people in relevant careers and writing a character sketch.

17. **RESEARCHING CAREERS:** Students develop research skills by exploring one of the occupational clusters.

18. **GUIDANCE FOR JOB PROBLEMS:** Students role play guidance counselors helping clients with employment problems.

19. **PEER TEACHING:** Students tutor younger students or classmates in reading, writing, spelling and other language arts skills.

20. **COMMUNICATING THE NEWS:** Students produce a news broadcast.

2. INTRODUCTION

As an English teacher, you should consider career education as an integral and appropriate component of your teaching which will **increase your students' ability and motivation to learn English content and skills.** Moreover, as an English teacher, you are in an excellent position to integrate career education activities into your courses. English instructors teach courses which contain a variety of topics, instructional areas, and skills, including reading, writing, listening, speaking, communication styles (poetry, prose, drama), and analytic skills (interpretation, character analysis, literal comprehension, drawing conclusions, vocabulary, connotation and denotation, symbolism, etc.). As an English teacher, you also have considerable flexibility in terms of what you teach in your courses and how you teach it.

How will the integration of career education activities into your courses help you achieve English objectives? There are at least three answers to this question.

1. While engaging in the career education activities provided in this manual, your students will learn a great deal about English **topics** related to the career or occupation they are studying. For example, if a group of students visits backstage of a theatre and talks with the actors and actresses, stagehands, choreographer, set designer, and other theatre personnel, the students will learn much about how plays are written (e.g., stage directions) and about drama as a form of communication.

*The activities in this section of the manual begin with number 11 because the numbering continues sequentially after the last activity (number 10) of the previous section of social studies activities.

In short, learning about careers in English fields automatically involves learning about English subject matter.

2. Many of the **skills** in the English curricula will be developed or reinforced through the use of career education activities, including such English skills as reading, writing, speaking, and interpretation.
3. By including career education activities in your courses you will increase your students' **motivation** to study and learn about English topics and develop related skills. By studying careers related to English in exciting, action-oriented ways, students will be stimulated to delve further into the field related to the occupations they are investigating. For example, students who take a field trip backstage to a theatre are likely to want to read more about theatre production. In this manner, career topics have the attractiveness of **"relevance"** for studying and learning English content matter and skills. Activities dealing with concrete, current occupations of personal concern to your students can add motivation to the disaffected as well as involved student who wants to know what English has to do with the world of an adult: "Can studying the parts of speech get me a job?" is the unspoken query of many students today.

How can integration of career education with English operate in practice? Let's look briefly at a hypothetical Sample Week's Lesson Plans to see how you can integrate career education activities into your English courses.

3. SAMPLE WEEK'S LESSON PLANS

The hypothetical but typical week's lesson plans on the following pages are "being used" in an English course that is in its second term. The lesson plans presume that you (or previous teacher) have already discussed the nature of the novel.

You have now come to the point where the short story, as a form of literature, will be discussed. You have chosen to integrate a career education activity on how careers and personality interact (Activity #16) into the fifth class period during this hypothetical second term. You have integrated the activity in such a way that it not only will help your students become familiar with how personality influences job selection, satisfaction, and performance, and thereby achieve **a career education goal,** but it will also help students to learn about the nature of the short story and characterization by writing one and thereby achieve two **English objectives.**

There is a great deal of flexibility in how you could integrate Activity #16 into your English lesson plans. The activity could be used after a study of the short story is completed, rather than while the short story is being studied. Or you could single out those sections of a novel students are already reading (as part of your English course) that happen to relate careers to personality and then implement the activity. In addition, it may take some students more than three days in which to write their story, so that you might not want to schedule discussion of the results until several days after the assignment has been given, or you might consider having your students write a brief character sketch, rather than a short story.

Activity #16 suggests students interview one or more people who work in the occupations they plan to write about before they begin to write their short story. You could assign this part of the activity several days before you discuss the short story so that students would have a firmer grasp on what the occupation involves that they planned to write about.

As you integrate some of the other activities into your lesson plans, adapt them, too, in any way that seems useful, but keep in mind their essential purpose: to help students become aware of job possibilities and of what compensations, skills, and tasks different occupations require.

SAMPLE WEEK'S LESSON PLANS

(An illustration of one way to integrate a career education activity into your course.)

HOMEWORK ASSIGNMENT	DESCRIPTION OF CLASS ACTIVITY
Students read "The Prussian Officer" by D.H. Lawrence (or any short story in which an occupation is a significant factor in the story).	• Class discusses elements of short story and compares it to novel, using homework and prior assignments in reading novels as concrete examples. Elements can include length, plot, characterization, and themes. • Class also discusses structure of short story: beginning, middle, end: when characters can be introduced; setting, etc.
Students write brief analysis of how the officer's military occupation may have influenced his personality and vice versa.	• Class discusses homework using questions in Activity #16 as basis. • Teacher assigns homework for next three days, which is for students to write a short story which revolves to a significant extent how the protogonist's occupation relates to his or her personality in terms of job selection, performance, enjoyment, advancement, etc.
Students write story.	• Class discusses short story as form of literature in terms of opportunities for and methods of characterization-how personality can be revealed (through stream-of-consciousness, first-person thinking, dialogue, action description, etc. • Class relates opportunities for characterization in the short story to how careers relate to personality.
Students write story.	• Students read in class a brief O'Henry story, such as "The Cop and the Anthem," and compare it to "The Prussian Officer" in terms of its structure and in terms of how it relates careers to personality.
Students write story.	• Class reads aloud some of their stories and discusses them in terms of: 1. The nature of the short story 2. What they illustrate in terms of how careers influence personality and how personality influences job selection, performance, and satisfaction. (Activity #16).

4. CROSS REFERENCE

The cross reference below identifies by number activities which treat particular occupational issues and and jobs (listed across the top of the page) and activities which reinforce specific English topics and skills (listed down the left-hand margin of the page). By using the reference, you can locate activities by specific jobs or occupational issues which you may want to teach or by particular English topics and skills which you feel are relevant points in your curriculum at which to introduce a study of careers.

ENGLISH

CROSS REFERENCE

TOPIC OR SKILL / OCCUPATIONAL FOCUS	Advertising	Advertising Representative	Advertising Writer	All Occupations	Career Planning	Handicapped Employment	Health Care Professional	Interviewer	Investment Broker	Journalism	Journalist	Law	Mass Media Positions	Media Professions	News Broadcaster	News Writer/Editor	Occupational Exploration	Pollster	Publishing Industry	Retail Business Manager	Repair Work	Salesperson	Second Careers	Secretary	Social Work	Survey Designer	Teacher	Teaching	Television Programmer	Theatre Occupations	Tutor
Bibliographical Skills				11																											
Cataloguing				11																											
Characterization				18		18																18									
Communication Skills		12	12	14 18	13	18			14				20		20	20	12			13		14	18	13			14		12		
Drama				14 18	13	18			14				20		20	20				13		14	18	13			14				
Editing	16									16		16	20	16	20	20			16		16				16			16		16	
Interpretation	16	12	12					15		16	15	16		16			12	15	16		16				16	15		16	12	16	
Journalism								15			15		20		20	20		15								15					
Notetaking	16									16		16		16					16		16				16			16		16	
Oral Communication	16									16		16		16					16		16				16			16		16	
Expository Writing								15			15							15								15					
Precis Writing				11																											
Public Speaking	16			14	13 18	18			14	16		16	20	16	20	20			16	13	16	14	18	13	16		14	16		16	
Questioning	16							15		16	15	16		16				15	16		16				16	15		16		16	
Reading	16			11 17			17			16		16		16					16		16				16		19	16		16	19
Report Writing				17			17																								
Research				17			17																								
Skimming				11																											
Spelling																										19					19
Writing	16	12	12	11						16		16	20	16	20	20	12		16		16				16		19	16	12	16	19

OCCUPATIONAL FOCUS:

- All Occupations

ENGLISH RELEVANCE:

- Bibliographical Skills
- Cataloguing
- Reading
- Writing
- Précis Writing
- Skimming

Activity #11

Subject Area:

English

JOBS IN FACT AND FICTION

Capsule Activity Description:

Students prepare a reading list of literature relating to an interesting career and provide a report on the contents.

Teaching Prerequisites:

materials needed: none
contacts with community: none
approximate preparation time: ½-1 hour
approximate class time: 1-3 classes

English Objectives:

to develop research skills in the area of developing bibliographics;
to practice reading skills; to learn to write a précis.

ACTIVITY

The purpose of this activity is to develop and review written materials which raise occupational or career issues and describe accurately different jobs. The tasks include developing a list of items, reading or skimming them, recording basic bibliographic information about them, writing a précis describing each item, and "publishing" the results as a guide for other students.

There are numerous occasions on which you can usefully integrate the activity into your English course. You can use the activity any time you want students to gain realistic and meaningful practice in developing a reading list, recording basic bibliographic data, writing précis, and skimming.

Students begin the activity by selecting a career area which interests them (e.g., transportation, medicine, construction, farming); students who select the same occupational area can conduct the exercise together. Students (and/or groups) then use library reference materials or brainstorm to develop a list of specific job titles within the occupational area they have chosen (e.g., trucker, nurse, brick layer,

crop sprayer). Students then search the school and other local libraries for books and pamphlets which describe people performing the jobs or raise issues related to the jobs. Students do not collect literature that is explicitly career education literature, but rather concentrate on locating biographies, autobiographies, poems, plays, short stories, and novels which treat the jobs they have selected. In addition to using libraries, students can also talk with people employed in these occupations to ask if they are familiar with appropriate books related to their jobs.

If students find an abundance of items that treat their chosen jobs, they select from among the books those that seem most appropriate and interesting. You and they can agree on minimum and maximum number to retain.

Having selected appropriate literature, students record basic bibliographic information on each according to the bibliographic methodology you teach.

Students then select one or more of the items they have included in their bibliographies to read or skim for the purpose of writing a précis of the book's contents and relevance to career education. Once again, you decide with your students how many books (or poems, short stories, etc.) they must read and/or skim and write précis on. You can vary the number of items to be read from student to student, depending on their reading ability and the difficulty and length of the literature each pupil has listed in his or her bibliography. Information students can describe in their précis can include the following:

- occupation treated
- whether career issues are a major focus in the item
- specific occupational information provided–e.g.,
  - tasks involved in it
  - skills needed to be successful at it
  - information or knowledge needed to be successful at it
  - discriminatory behavior practiced in it
  - why people enter it
  - what types of people enter it
  - fringe benefits and salary ranges it provides
  - satisfactions it provides
  - negative aspects of the work
  - how it affects the employee's personality
- whether the item is difficult or easy to read
- whether the item was interesting to read.

After writing their précis, students review their bibliographies and précis with you and with other students, revise them, and place them in manila folders for use by other students in the school. You can also duplicate copies of the materials and keep them on file in the school library, after announcing their availability in the school newspaper or daily school bulletin.

When the activity is complete (or at critical stages of its progress), class discussions can be held on the nature of developing bibliographies, skimming, speed reading, and writing a précis. In addition, the specific occupational information learned by each student can be shared with other members of the class either by assigning students to read each other's reports or having selected students give oral presentations to the class on what they learned. In particular, students can focus on **why** people take certain jobs–what they think they will like about them, including concern not only about the type of work involved and the salary, but also concerns about having job security, following in a parent's or

role model's footsteps, being "desperate" for a job and taking the first opening available, having evenings and weekends free, avoiding or desiring a job that requires responsibility or initiative, or finding a job which offers the opportunity to exercise authority, leadership, or creativity.

Resources:

- **Occupational Information,** R. Hoppock, McGraw Hill, 330 West 42nd St., New York, New York 10036
- **Encyclopedia of Careers and Vocational Guidance,** Vols. I & II, William E. Hopke, Doubleday, Garden City, New York 11530

Students can read the following novels, short stories, and poems which deal with interesting occupations or careers.

- **The Assistant,** Bernard Malamud (small business–grocery store owner)
- **The Last Hurrah,** Edwin O'Connor (professional politics)
- **Facing the Lions,** Tom Wicker (newspaper business)
- "He," Katherine Anne Porter (mother)
- "The Egg," Sherwood Anderson (chicken farm and small restaurant owner)
- "The Patented Gate and The Mean Hamburger," Robert Penn Warren (running a diner)
- "Flowers for Algernon," Daniel Keyes (medical professionals)
- "The Secret Life of Walter Mitty," James Thurber (you name it)
- "A Visit of Charity," Eudora Welty (nursing homes personnel)
- **The Bell Jar,** Sylvia Plath (journalist and psychiatrist)
- **The Fountainhead,** Ayn Rand (architect)
- **The Taking of Pelham One, Two, Three,** John Godey (transportation management)
- **Sister Carrie,** Theodore Dreiser (traveling salesman)
- **An American Tragedy,** Theodore Dreiser (attorney and businessman)
- **Arrowsmith,** Sinclair Lewis (medical researcher)
- **The Sun Also Rises,** Ernest Hemingway (journalist)
- **The Old Man and the Sea,** Ernest Hemingway (fisherman)

Activity #11

- **Appointment in Samarra,** John O'Hara
  (business executive)
- **All the King's Men,** Robert Penn Warren
  (politician and director of state hospital)
- **Up the Down Staircase,** Bel Kaufman
  (teacher)
- **To Sir With Love,** E. R. Braithwaite
  (teacher)
- **I Never Promised You A Rose Garden,** Hannah Green
  (psychiatrist)
- **Johnny Got His Gun,** Dalton Trumbo
  (V.A. hospital staff)
- **The New Centurions,** Wambaugh
  (police officer)
- **Tono-Bungay,** H. G. Wells
  (aeronautical engineering and patent medicine)
- **Heart of Darkness,** Joseph Conrad
  (experienced seaman)
- **Lord Jim,** Joseph Conrad
  (experienced seaman)
- **Sons and Lovers,** D. H. Lawrence
  (coal miner)
- **A Portrait of the Artist as a Young Man,** James Joyce
  (artist, teacher)
- **A Passage to India,** E. M. Forster
  (surgeon, principal, and teacher)
- **The Power and the Glory,** Graham Greene
  (priest)
- "A Civil Servant," Robert Graves
- "Dolor," Theodore Roethke
  (office worker)
- "Night Shift," Sylvia Plath
  (factory workers)
- "What is He?" D. H. Lawrence
  (cabinet maker, craftsperson)
- "Buyers and Sellers," Carl Sandburg
  (laborers, generally)
- "My Bus Conductor," Robert McGough
- "A Politician Is an Arse Upon," e. e. cummings
- "Lines Written for Gene Kelly to Dance to," Carl Sandburg
- "Jazz Fantasia," Carl Sandburg
  (jazz musician)

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Occupational Stereotyping
- Advertising Representative
- Advertising Writer
- Television Programmer

ENGLISH RELEVANCE:

- Communication Skills
- Interpretation
- Writing

Activity #12

Subject Area:

English

THE NEWS ON SEX AND RACE

***Capsule Activity Description:**

Students evaluate advertising and television programs and their relationship to ethnic, age, sex, and geographic stereotyping.

Teaching Prerequisites:

materials needed: back issues of different magazines
contacts with community: none
approximate preparation time: ½-1 hour
approximate class time: ½-4 classes

English Objectives:

to practice interpretation and verbal communication skills; to practice expository and narrative writing.

ACTIVITY

This activity involves a study of how advertising and television programs exhibit occupational stereotyping and an examination of two powerful forms of verbal and visual communication. The activity has two options. You can use either one or both. Option One is a study of advertising in magazines and on television; Option Two is devoted to examining television programs.

You can integrate the activity into your English course whenever you study advertising as a form of communication, treat the issue of stereotyping, or discuss visual communication and interpretation skills. In addition, the activity involves writing, both expository and narrative, and can therefore be used to motivate students to practice writing skills.

*This activity has been revised from an activity developed by the Counselors of Howard County, Maryland. We are grateful for permission to use it. The original activity is part of *Career Education Resource Guide, Grades 6-8. It's Time to Plan*, The Howard County Public School System (8045 Route 32, Columbia, Maryland 21044: 1971).

Activity #12

Begin the activity by explaining the concept of stereotyping. Basically, the concept involves **generalizing** about a group of people and assuming **everyone** in that group conforms to the generalization. For example, most homemakers are women. Many people therefore assume that **all** homemakers are women. As a result, when we meet "the man of the house" we assume that he is not the homemaker.

Use examples from magazine and television advertising to illustrate the concept—advertisements with men selling cars and beer or women purchasing detergent. An example of stereotyping in television programming is including a black as one of the police officers, but rarely or never as a police sergeant, detective, or supervisor. After explaining the concept of stereotyping, discuss the ways in which **occupational** stereotyping can occur, including racial, sex, geographic, religious and economic stereotyping.

You can now select one or both of the options described below for study.

Option One. In this option, students study occupational stereotyping in magazine and television advertising and analyze advertising as a form of communication. Begin by dividing the class into small groups which have a mixture of both sexes and all ethnic backgrounds. Although each group can study all kinds of occupational stereotyping in jobs, each can also be assigned to concentrate on finding examples only of **specific types** of occupational stereotyping, such as sex, ethnic, and age. One group can also look for examples of advertising which do **not** stereotype at all. Assign each small group, as homework, to cut pictures out of magazines that illustrate occupational stereotyping. If students do not have magazines readily available at home, provide copies yourself.

When the groups have gathered their advertisements, each group discusses their findings in the following terms and takes notes on their conclusions:

1. What kind of occupational stereotyping did you find? Sex? Race? Age? Religious? Geographic? Class?
2. Why are these examples of stereotyping?
3. How could you change each advertisement so that it did not stereotype?

Follow-up class discussion can summarize and compare the groups' conclusions and move on to:

- discuss why advertisers stereotype and whether they do so deliberately or unthinkingly;
- think of examples of occupational stereotyping in recent literature it has read in English class and discuss why the authors may have stereotyped their characters;
- discuss how occupational stereotyping can discourage members of the groups against whom the stereotypes generalize from seeking employment in certain fields and how stereotyping about jobs confirms the discriminatory behavior of employers against certain groups.
- draw an advertisement for one of the products illustrated in an advertisement that was brought to class and illustrate how the advertisement could be presented so as to avoid occupational (or any other) stereotyping;
- discuss whether developing advertisements can involve being creative and be fun and whether a career in advertising would be rewarding;
- discuss how they would feel as advertisers promoting a product using deceptive advertising techniques or a product in which they didn't believe;
- discuss whether advertising personnel may "take it personally" if a product they promote doesn't sell and what pressures may be on them to succeed;
- discuss what skills are needed to be a successful advertiser;

- discuss what methods exist by which to communicate effectively an idea.

This option can be extended if students study advertisements on television. Students can divide into small groups again and spend several evenings or weekends identifying examples of occupational stereotyping in television advertisements and compare their findings in class.

Option Two. In this option, the class again breaks into small groups, but each group researches a different type of occupational stereotyping illustrated in television **programs**, not advertising. Programs can include "soap operas," detective and police stories, situation comedies, and news broadcasts. Students then engage in essentially the same exercises as in Option One, except that they:

- write down the examples of occupational stereotyping they view and bring their reports to class, rather than cut out magazine advertisements;
- can also observe the programs not only for instances of occupational stereotyping, but to see what kinds of jobs are shown and not shown, and whether occupational stereotyping seems to be concentrated in particular against certain occupations or job tasks;
- what aspects of the jobs are shown and what are hidden?
- formulate how the programs they viewed could be presented without any stereotyping.

Useful Prior and Subsequent Activities:

- If students engage in both options, groups can determine whether occupational stereotyping in magazine and television advertising is similar to stereotyping occurring on television programs.
- Students can write advertising agencies and television stations inquiring why they portray what students feel to be occupational stereotyping.
- Students can invite advertisers to class to discuss advertising as a career and the communication skills needed to be a successful advertiser.

Resources: Vance Packard's **The Hidden Persuaders** (Pocket Books) is a standard and readable popular treatment of advertising; a view from "the inside" can be obtained from **Confessions of an Advertising Man**, by David Ogilvy (Ballantine).

- American Association of Advertising Agencies
  200 Park Avenue
  New York, New York 10017
- American Advertising Federation
  1225 Connecticut Avenue, N.W.
  Washington, D.C. 20036
- J. Walter Thompson Company (advertising agency)
  420 Lexington Avenue
  New York, New York 10017
- National Broadcasting Company, Inc.
  30 Rockefeller Plaza
  New York, New York 10020

Students can also read Marshall McLuhan, **The Medium is the Message.**

OCCUPATIONAL FOCUS:

- Retail Business Manager
- Secretary
- Career Planning

ENGLISH RELEVANCE:

- Communication Skills
- Public Speaking
- Drama (plays)

Activity #13

Subject Area:

English

ACT NOW TO PLAN YOUR CAREER

***Capsule Activity Description:**

Students perform a socio-drama and the class reacts.

Teaching Prerequisites:

materials needed: five copies of the script
contact with community: none
approximate preparation time: ½-1 hour
approximate class time: 1½-2½ classes

English Objectives:

to practice speaking in front of a group; to practice communicating effectively; to gain insight into the way plays are acted.

ACTIVITY

In this activity, students learn about careers by engaging in a brief socio-drama centered around the issue of career planning. In addition, the activity requires students to practice several English skills, including oral communication, editing, and public speaking. You can use the activity whenever you are teaching one of these English skills. In addition, you can also integrate the activity into a unit on drama, since the socio-drama illustrates many of the features of stage acting, including declaiming, emoting, and ad-libbing.

Assign the parts of the drama the day before, so that the actors can become familiar with their parts. Encourage the actors to make additions or revisions in their parts. During the class presentation, each actor wears a name card around the neck to enable the rest of the class to identify each character.

*This activity has been revised from an activity developed by L. Vetter and B. Sethney. The original activity is part of *Planning Ahead for the World of Work*, Ohio State University, Center for Vocational Education (Columbus, Ohio: 1971).

Activity #13

CAST:

Janet – planning to go to business school after high school graduation

Sara – following vocational course in high school will work full-time after graduation

Margie – planning to go to a four-year liberal arts college after graduating from high school

Diana – will look for a job after high school graduation (no special vocational training)

Elaine – dropping out before high school graduation to get married

SCENE: Girls getting together for a coke after school.

CONVERSATION:

Diana: That English test was harder than I expected. Never have been able to guess what Mrs. Mills might include on one of her tests. Margie, you always get A's in English. Did you think the test was hard?

Margie: Sure it was, but Mrs. Mills is always fair in the questions she asks. Don't you remember reviewing the questions in class?

Janet: You know, English is such an important subject and Mrs. Mills makes it so interesting–I really don't mind putting in the time and effort. In fact, what I'm learning this year is really going to be a help to me next year in business school, stuff like grammar and letter writing.

Elaine: What do you mean–helpful? I'm so tired of all this Chaucer mess. If we only did something even slightly practical once in a while. When Bill and I get married in December I plan to quit school and find a job so that at last I'll be doing something worthwhile.

Sara: What kind of job will you be able to get, Elaine, without a high school diploma?

Elaine: I've had a year of typing so I certainly won't have any trouble getting hired as a secretary. Lots of girls graduate from high school with less than that.

Janet: Yes, perhaps some haven't had typing, but it would be the diploma that I'd be concerned about. I understand a high school diploma is a necessity these days if you hope to find a job you'll really be happy in. I've had typing and a year of shorthand but I want to increase my chances for a really special secretarial job. You won't catch me filing in some office from 9-5. I'm going to take the business school's high skill shorthand course and a year from now I'll be qualified to apply for top-notch positions.

Sara: Your plan sounds good, Janet. I'm glad I enrolled in distributive education this past year because I now have enough work experience to know the type of job I'd like to do. You will be going to business school after you graduate–I'm getting my training right here at good ol' City High. By the time I graduate, I'll have a pretty good idea about some parts of the variety store business and general ideas about the total operation of the store. I've learned a lot about the merchandise through stock work and even get to help with some of the candy department ordering. I plan to continue working at the same variety store after graduation and am really looking forward to beginning training on the cash register–we're starting that in class next week.

Diana: Sounds like you two have really been planning ahead. I just don't know what kind of job I might be interested in after graduation.

Elaine: Why worry, Diana? You'll probably be getting married before long, so any kind of job will do in the meantime.

Margie: You don't really mean that, do you Elaine? Forty hours a week is a terribly long time to

do something you're not interested in. Besides that, you've already said you plan to work after you and Bill marry. Diana may get married but she will also probably work a year or even years afterwards.

Diana: Gee, Margie, you'll have an extra four years to put off making a decision. Bet you'll have fun while you're in school down at State U.

Margie: Sure, I'll have fun, but I'm not going to put off deciding what I want to do for four years. I'll have to take courses that will apply to whatever area I decide to major in and to decide what to major in I'll sort of have to know what I want to do after college. Right now, I think teaching first grade would be the greatest—all those cute kids.

Janet: Thought you wanted to be some sort of lab technician.

Margie: Oh, Janet, you're thinking about **last** week.

After the performance, students break into small groups to discuss one or more of the following issues:

1. What is each character's general attitude toward the future?
2. What is each character's attitude toward preparing for employment in the future?
3. What are some jobs Elaine will be able to get if she drops out of high school?
4. Are there ways in which dropping out of high school can be beneficial? Is it possible to take a "leave of absence" from high school and return at a later date? What are some of the advantages and disadvantages of doing this?
5. Has any of these characters planned well for her future? What are good ways to plan for a career? What are bad ways?
6. What things, if any, do you learn in English that will be helpful no matter what occupation you choose? Which of these things could also be learned outside of school? Are there English skills which are learned better outside of school?
7. What English skills were used in the socio-drama? How well were they used? Which skills used in the socio-drama are used by professional actors and actresses?
8. Was there anything in the socio-drama that relates to problems women may have choosing a career? Would the socio-drama have been different if the parts were for boys? Are there ways in which boys and girls should plan differently for a career? Are there examples of sex stereotyping in the dialogue of the socio-drama?

Groups present their conclusions to the other students and they and you comment on them.

Useful Prior and Subsequent Activities

- Students can write their own socio-dramas in small groups and present them to the class. The dramas can revolve around specific occupations or around general career issues which cut across occupations (e.g., second careers, sex, age, or ethnic discrimination).
- Students can invite a group of women to class for a panel discussion on discrimination against women in the job market and dilemmas women may experience between "staying at home" and "raising a family" vs. becoming employed. The women can include employed women and "housewives," part time and full-time employed women, and professional and non-professional working women. During the following class, students can evaluate the panel's speaking styles and ability to communicate clearly as part of the English component of the exercise.

Activity #13

Resources: Two major paperback novels about business are **An American Tragedy,** by Theodore Dreiser and **Appointment in Samarra,** by John O'Hara.

Films:

- "The Big Question, Choosing Your Career,"
  Association Films,
  Modern Talking Picture Service,
  Dallas, Texas
- "Choosing Your Occupation,"
  Coronet Films,
  Coronet Building,
  Chicago, Illinois 60601

Filmstrips:

- Guidance Associates, Pleasantville, New York
  "I Never Looked at It That Way Before," Parts I & II
- "Preparing for the Job of the '70's"
- "Failure: A Step Toward Growth"
- "What You Should Know Before You Go to Work"

Game:

- "Life Career Game,"
  Palo Alto Unified School District,
  25 Churchill Avenue,
  Palo Alto, California 94306

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Teacher
- Salesperson
- Investment Broker
- Any Occupation – Teacher's/Students' Choice

ENGLISH RELEVANCE:

- Public Speaking
- Drama
- Communication Skills

Activity #14

Subject Area:

English

JOBS, ETHICS, AND LIFESTYLES

***Capsule Activity Description:**

Students role play conflicts arising from a career lifestyle.

Teaching Prerequisites:

materials needed: copies of the role descriptions
contacts with community: none
approximate preparation time: ½-1 hour
approximate class time: 1½-3½ classes

English Objectives:

to experience speaking and acting in public; to practice public speaking skills; to gain insight into the nature of dramatic productions and acting; to practice skills of clear and forceful oral communication; to practice writing skills (optional).

ACTIVITY

This activity involves students in role playing and developing role plays of situations in which two people have come into conflict as a result of the job demands placed on one or both of them. Each person is then required to resolve the conflict by balancing their occupational and other responsibilities with their concern about their interpersonal relationship with the other person.

The activity can be easily integrated into a number of places in an English course, but most appropriately when the class is learning effective oral communication skills, including learning how to speak in public. If students develop their own role profiles, as suggested, you can usefully integrate the

*This activity has been revised from an activity developed by Robert Pasco. We are grateful for permission to use it. The original activity is part of *Integration of Career Education Concepts and Activities into the High School Curriculum*, Essex Junction Educational Center (Essex Junction, Vermont: 1973) which may be ordered from Essex Junction Educational Center, Essex Junction, Vermont for $3.00.

activity into your course when you discuss characterization in novels, short stories, poems, or plays, since in writing their roles, students will be developing short character sketches of their own.

Follow up each role play with a discussion around the following questions:

1. Was the conflict a real one?
2. How successful were the players in communicating accurately what they wanted to say to each other? Were there any noteworthy failures to communicate? If so, why did these occur? Poor word choice? Poor grammar? Incoherent statements? Failure to listen to what the other person was really saying?
3. What did the role play reveal about the character or personality of each player? How did the role play reveal character, or why did the role play fail to reveal the players' character? Are the ways characters were revealed in the role play similar to the methods novelists, poets, etc. use to reveal character?
4. What seemed to be the real reasons behind what the players said and did?
5. What alternative solutions might have occurred?
6. Would any students like to volunteer to repeat the role play in their own fashion?

The follow-up discussion can also revolve around two central issues these role plays reveal: sex and ethnic discrimination, and emotional conflicts associated with jobs. For example, the second role play can be discussed in terms of who should stay at home to "take care of the kids," how men may react to women in general and wives in particular who hold more prestigious or better paying jobs than they, and how the community and colleagues react to people who hold jobs not traditionally associated with their sex. The third role play raises the issue of reverse ethnic discrimination, how it manifests itself in the world of work and whether minority employees should eliminate it or take advantage of it.

The emotional or affective issues involved in the role plays are critical. For example, in the first role play, the husband must choose between at least four sets of values: the value he places on getting psychological and personal satisfaction from being promoted in his company; the value he places on making his wife and children happy; the value he places on the material benefits he can have by earning extra money. Jobs are more than simply performing a task from 9 to 5 five days a week. A wide range of emotional issues are involved in almost every job.

Four sample role plays are provided below. You or your students can revise them to suit your particular needs or develop ones of your own. Before engaging in the role plays, students can engage in one or more of the "warm-up" exercises suggested in the section on Role Playing in the section on Effective Teaching Methods for Career Education at the end of the manual. After the role plays, you can encourage students to develop their own role profiles in small groups, with each group presenting its profiles to one other group which then play the parts.

Situation One

Role A: You are Sam Salesperson and you earn a good salary. You spend many hours, including evenings and Saturdays, on the job. You do not particularly like this work, but you feel that the money you earn working overtime is important. You have just come home late—it's 11 p.m.—and your wife, Sally, is waiting for you. She looks angry.

Role B: You are Mrs. Sally Salesperson. You have been upset and complained to your husband, Sam, that he is never home. You have two children and feel your husband doesn't spend enough time with you and the kids. You are willing to give up many of your "luxuries" for a simpler life but a fuller family life. It is 11 p.m., the children are asleep, and you are wait-

ing for Sam to come home from another night of overtime. You've decided he has to stop working seventy hours a week. Sam enters the house looking tired.

Situation Two

Role A: You are Tom Teacher and have been working in the local elementary school for three years. You like your work and want to continue. The salary is not essential, since your wife Theresa has a very good salary. You have a three-year-old daughter. You and Theresa are out to dinner and you sense that she has something on her mind.

Role B: You are Theresa Teacher and you are the high school principal. Since you have worked at this job, your salary and your position in the community have risen greatly; you are proud of both. You feel that your husband Tom should quit his job as an elementary school teacher and stay home with your daughter. Your salary is certainly enough to care for all of you. You have gone out to dinner, hoping to soften him up for the discussion you want to start. Tonight you are going to ask him to quit his teaching job. You look across the table and begin to talk.

Situation Three

Role A: You are Barry (or Betty) Broker and work with people's investments in a small rural town. You have done well in this firm and also like the town very much, because you have so many friends and enjoy the "country." You are single, so you are free to move but would not like to leave your town. Your regional manager, Bill (or Bess) Boss has called you to a meeting in the main company's regional office in (New York, Chicago, San Francisco). You enter the office wondering why you have been asked to make the trip. You're a little concerned because, being part Indian, you are surprised at your superior's attention.

Role B: You are Bill (or Bess) Boss and are the regional manager of a major national investment firm with assets of over four billion dollars. You have been very impressed with Barry (or Betty) Broker who is in charge of one of your small town offices. There is a job opening in the regional office that you want Barry (or Betty) to fill because the position involves supervision of local brokers in Nebraska, North Dakota, and South Dakota, rural states where Barry's (or Betty's) intimate knowledge of rural and small town life will be invaluable. In addition, Barry (or Betty) is partly Indian, and by promoting him (her), you can help satisfy the federal government's requirement that your company hire more minority staff in important company positions. The salary will be doubled. The chance for advancement is almost unlimited. Possibly this person could take your job when you retire in five years. You are sure he (she) will jump at the opportunity. You have summoned him (her) to your office and as he (she) enters, you get up from behind your desk to greet him (her). Then you explain the offer.

Situation Four

Role A: You are Everett Smith, a teacher in the Quiet Cove junior high school and president of the Parent-Teacher Association. You have two children in the neighborhood elementary school. As a parent, resident and teacher, you are angry about the proposed expansion of the small community airport in your town to serve regional transportation needs and accommodate scheduled air carrier flights. Even now, you must stop teaching whenever a small commuter jet takes off because your students cannot hear you. When the new runway is added, it will bring the planes even nearer the school and even closer to your house. So you circulated a petition among the students and teachers in the neighborhood and obtained 500 signatures.

Activity #14

In your petition you demand that the airport add a runway in a different direction. You have just walked into the office of the airport general manager, Jane Doe, with your petition. What do you say?

Role B: You, Jane Doe, are the general manager of Quiet Cove Municipal Airport. Your airport is small and now serves only private aircraft and a few air taxis. The region has started to grow and several large industries would move into the area if they had better air service. The local Chamber of Commerce and the regional development commission are pushing for another runway. With the technical assistance of the Federal Aviation Administration (FAA), you have decided to add a runway in the direction of the town of Quiet Cove so you will have airport service during most of the good and bad weather conditions. You know that this will make more noise for the Quiet Cove community as planes take off and land over their neighborhood; there is a lot of pressure on you from the airlines, the business community, and the local government officials to expand. You could expand in another direction, but to do so would involve filling in the Cove, and this would be too expensive, and could create problems with the natural environment. The FAA recommended solution is cheaper and probably the best compromise. You feel badly about the noise, but feel you cannot stop construction of the new runway. You have just ushered into your office Mr. Everett Smith, who made an appointment with you a week ago to talk over the airport expansion problem. How will you respond to him?

Useful Prior and Subsequent Activities:

- Students can invite parents who have experienced one of the problems in the role plays to attend the class during the role play and indicate how in their own lives they actually resolved the problem illustrated.
- Students can invite someone from an employment agency, personnel office, or career counseling service to class to observe and comment on the role plays.

Resources: Interesting fictional accounts of salespersons include:

- **Death of a Salesman,**
  by Arthur Miller (play)
- **The Pawnbroker,**
  by Wallant (novel)
- **The Assistant,**
  by Bernard Malamud (novel)
- **Sister Carrie,**
  by Theodore Dreiser (novel)
- "Buyers and Sellers,"
  by Carl Sandburg (poem)

Film:

- "Attitude and Occupation,"
  Coronet Film Company,
  Coronet Building,
  Chicago, Illinois 60601
- "How Can I Understand Others,"
  Jan Hardy Organization,
  2821 East Grand Boulevard,
  Detroit, Michigan 48211

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Pollster
- Interviewer
- Survey Designer
- Journalist

ENGLISH RELEVANCE:

- Expository Writing
- Journalism
- Questioning
- Interpreting

Activity #15

Subject Area:

English

QUESTIONS ABOUT JOBS

Capsule Activity Description:

Students simulate the jobs of survey designer, pollster, and journalist by developing and administering a poll and then writing a newspaper story on the responses.

Teaching Prerequisites:

materials needed: none
contacts with community: access to people to poll; field trip to newspaper office (optional); interview with journalist (optional)
approximate preparation time: ½-1 hour
approximate class time: 2-5 classes

English Objectives:

to practice skills in developing and asking useful questions; to practice expository writing; to practice interpretation skills; to learn about the techniques of journalism.

ACTIVITY

This activity is designed to enable students to:

1. develop through realistic practice several important English skills;
2. explore through simulation exercises careers in journalism; and
3. discuss an important occupational issue, ethnic hiring quotas.

You can introduce the activity at a number of points in your English curriculum, perhaps most easily and usefully when your class is studying skills related to questioning techniques—how to obtain meaningful answers by developing clear, unambiguous questions—or interpreting skills, since students, as part of the activity, must write a questionnaire and interpret the responses given on it. In addition,

the activity can provide your students with a practice exercise when you take up the topic of expository writing, since writing newspaper articles requires a factual, concise, and highly readable literary style.

The activity has five parts, the first and last of which are optional. The five steps are:

1. field trip to newspaper office and interview(s) with one or more journalists (optional);
2. selection of an interview topic and development of a questionnaire;
3. administration of the questionnaire;
4. tabulation and analysis of the results; and
5. development of an article based on the results for submission to the school or community newspaper (optional).

Step One

Students begin the activity by taking a tour of a local newspaper office and interviewing one or more journalists. Students can arrange for tours and interviews through the faculty newspaper adviser, students who write for the school newspaper, or by visiting the newspaper office themselves to request a tour at a later date.

Before the tour, the class breaks into small groups and each group develops a list of questions about journalism as a profession and way to develop, administer, and analyze surveys and polls. Sample questions students can ask follow.

1. What attracted you to the field of journalism?
2. What skills do you need? What English skills in particular do you need? Where did you learn them?
3. Do you find the job entails a great deal of pressure meeting deadlines and trying to interview people and observe events? Is there an excitement about "breaking" a news story and "covering" an interesting event? Are you limited in any ways by your superiors in what you can write? Are your articles ever censored or edited? If so, how does this make you feel?
4. What kinds of surveys has your newspaper conducted? How do you conduct them? How do you make sure the people you poll answer honestly?
5. Can you suggest some good topics for us to poll the public about?

Step Two

After developing their questions, touring the newspaper plant, and interviewing journalists, the groups select an interview topic for their poll and develop a concise, reasonable questionnaire. Topics groups can consider for their polls include:

- ethnic hiring quotas for businesses and agencies (Should they exist? Should they be required? What should the quota be? Who should decide?);
- sex discrimination against women (e.g., as baseball umpires, astronauts, airline pilots, bankers, miners) or against men (e.g., as elementary school teachers, nurses, secretaries);
- attitudes toward people who are employed in occupations with whom much of the public has had contacts or has strong feelings (e.g., teachers, politicians, psychiatrists, bankers, plumbers, truckers, garbage collectors);
- reasons why people have chosen their occupations;
- satisfactions and dissatisfactions people have with their jobs;
- husbands' attitudes toward wives who work, who hold more prestigious positions than they, or who earn more money than they; and
- a topic suggested by the reporter interviewed in Part One.

Once students have selected a topic for their questionnaire, each group develops a poll, considering such factors as:

- phrasing questions in the way most likely to get an honest response;
- avoiding questions that require a written response;
- avoiding too long a poll;
- assuring respondents of anonymity and seeing to it that the poll in fact cannot reveal names;
- investigating desirable and/or interesting relationships, such as sex, race, age, economic status and political preference.

A sample questionnaire on the issue of company quotas for hiring minority groups follows.

QUESTIONNAIRE

I am from Lincoln High School and am conducting a poll as part of an English class project. Would you be interested in answering a few questions for me? Your answers will remain anonymous.

Sex: _____

Approximate Age: _____

Section of Town: _____

Race: _____

1. Do you feel that companies should have quotas for hiring ethnic minorities–that is, should hire a certain percentage of minority people? Yes___ No___

2. If you do not, is that because you feel that:
   ____this is unfair to people who aren't minority persons?
   ____two wrongs don't make a right?
   ____this is a form of coddling and favoritism which is wrong?
   ____nobody should be given special breaks–everyone should earn his or her own way?
   ____Other (specify)_____
   _____

3. If you do believe in ethnic minority hiring quotas, is it because you feel:
   ____this is a good way to make up for the years of discrimination against minority persons?
   ____minority persons have a handicap when competing with whites in the job market and therefore need some advantages to offset the disadvantages?
   ____Other (specify)_____
   _____

4. If you do believe in quotas, what should the quota be?
   ____1%-5% ____6%-10% ____10%-15% ____15%-20% ____over 20%
   ____depends on the company ____depends on the number of minority persons in the community

Activity #15

Having developed its questionnaire, each group decides how many people it wants to and can feasibly poll and who these respondents should be. The group picks a number large enough to enable it to draw some conclusions from the answers to the polls, but small enough to accommodate the practical realities of time limitations. Groups can poll all the people in a certain neighborhood or different people in different neighborhoods. Possible polling sites include factory gates, construction sites, parking lots, office building lobbies, homes (door-to-door), and schools. Students can also contact parents and relatives to see if they can arrange for polls at their place of employment.

Step Three

The groups divide up responsibility for conducting the polls and then administer them. Students may want to conduct them in pairs or individually. They may want to canvass different neighborhoods superficially or converge on one part of town in more depth. Before conducting their interviews, however, each group pilot tests its questionnaire with at least one respondent, who can be a student, parent parent, or relative. This test not only serves to "de-bug" the questionnaire of confusions and repetitious questions, it also gives students a chance to practice polling techniques.

Step Four

After the questionnaires have been administered, the groups tabulate the responses. Methods of tabulating results and making correlations by age, sex, neighborhood and race are discussed in the section on Polls in the resource on Effective Teaching Methods for Career Education at the end of the manual. After making the appropriate tabulations and correlations, each group analyzes its findings and draws a set of conclusions. For example, a group might conclude in reference to a poll on ethnic minority hiring quotas that "the community is very divided on the issue, with white residents of upper Main Street tending to favor them, perhaps because these citizens have few unemployment problems and are therefore not threatened by the prospect of such quotas discriminating against them." Each group presents its results to the class and, if each group administered the same questionnaire, compares results. The class then discusses three issues:

1. what a reporter's, survey designer's, and pollster's job is like;
2. the career or occupational issue around which the poll was developed—e.g., **should** there be ethnic minority hiring quotas?; and
3. the English skills needed to develop, administer, and interpret a questionnaire.

Step Five (optional)

Each group can now write a newspaper article or television or radio news story summarizing the results of its survey and presenting its interpretation of the responses. Before writing the piece, groups examine a recent poll in the local newspaper for ideas on how to write theirs. Groups then assign different students different parts of the article to write—e.g., the opening paragraph; a description of the questionnaire; an account of who was polled and how; a discussion of the answers; and, finally, an interpretation of the responses.

After writing their articles, the class discusses what a newspaper, television, or radio reporter's job entails and what English skills are needed in order to be a good reporter.

Useful Prior and Subsequent Activities:

- Students can submit their articles to the local newspaper, radio station, or television studio for possible publication or airing.
- Students can write an editorial to go along with the news report they wrote. The editorial would require students to evaluate their findings and relate them to policy issues or concrete action.

- A professional newspaper, radio, or television reporter can be invited to class to comment on the students' articles.

Resources: The following novels and autobiographies describe the world of newspapers and publishing.

- **All the President's Men**
  Bernstein and Woodward
- **Making It**
  Norman Podhoretz
  (autobiography of a magazine writer and editor of **Commentary**)
- **Facing the Lions**
  Tom Wicker
  (novel about the publishing industry and a reporter by a **New York Times** editor)
- **The Last Hurrah**
  Edwin O'Connor
  (novel about a newspaper cartoonist following the last campaign of a politician whose life is based on the career of James Michael Curley)
- **All the King's Men**
  Robert Penn Warren
  (novel describing a journalist following the career of a politician whose life is based on the career of Huey Long)

- In addition, **The Power and the Glory** by Gay Talese describes the inner workings of the the **New York Times.**

The following polling organizations may have useful information:

- Hinder Public Opinion Analysts
  Yankelovich, Daniel Inc.
  575 Madison Avenue
  New York, New York 10022
- American Institute of Public Opinion
  53 Bank Street
  Princeton, New Jersey 08540
- Louis Harris & Associates
  1270 Sixth Avenue
  New York, New York 10020
- National Opinion Research Center
  University of Chicago
  817 Broadway
  New York, New York 10003
- Roper Organization
  One Park Avenue
  New York, New York 10016

Comments from Teachers and Students:

OCCUPATIONAL FOCUS:

- Publishing Industry
- Advertising
- Teaching
- Repair Work
- Social Work
- Media Professions
- Journalism
- Law
- Theatre Occupations

ENGLISH RELEVANCE:

- Writing
- Oral Communication
- Public Speaking
- Reading
- Editing
- Interpretation
- Notetaking
- Questioning

Activity #16

Subject Area:

English

ENGLISH ON THE JOB

***Capsule Activity Description:**

Students determine how English skills are used in different occupations by interviewing people in relevant careers.

Teaching Prerequisites:

materials needed: none
contacts with community: interview with different persons in the community
approximate teacher preparation time: ½-1 hour
approximate class time: 2-3 classes

English Objectives:

To practice questioning and notetaking techniques, interpretation skills, and writing skills.

ACTIVITY

This activity has four steps. Participating students (1) identify occupations in which English skills are significantly used and then arrange for interviews with people employed in those occupations; (2) develop questionnaires and observation instruments for use while interviewing and observing these individuals; (3) conduct the interviews and observations; and (4) discuss the results of their research.

The activity can be easily integrated into an English course at almost any time, since the exercises involved relate to the three major English skills of reading, writing, and oral communication. More specifically, the activity can be used whenever you take up the skills of questioning and notetaking,

*This activity has been revised from an activity developed by Edward V. Cornely. We are grateful for permission to use it. The original activity is part of *Integration of Career Education Concepts and Activities into the High School Curriculum*, Essex Junction Educational Center (Essex Junction, Vermont: 1973) which may be ordered from Essex Junction Educational Center, Essex Junction, Vermont for $3.00.

since the activity requires students to develop their own questionnaires and take their own notes during interviews. In addition, the activity will help motivate students to learn and practice English skills because it will help them see the practical relevance of English for performing successfully tasks in a variety of different jobs and professions.

Initially, students either in small groups or individually identify as many occupations as possible in which English skills are significantly used such as the jobs listed in the box at the beginning of this activity.

Students can then, with your assistance as needed, identify individual employees who hold these jobs in the community and arrange interviews with ones who are willing to be questioned and/or observed.

Next, students develop questionnaires and/or observation instruments appropriate to each person or group of persons they plan to contact. Sample questions students could ask an automobile or appliance repair person, for example, include the following:

1. What is your specific job title?

2. In general, what do you do in your job?

3. Which of the following skills, if any, are important for success at your job?
   writing ☐ reading ☐ listening and understanding ☐
   oral communication ☐ questioning ☐ notetaking ☐

4. Could you describe why these skills are important to your job?

5. Where and how did you learn these skills?

6. Do you feel you could have learned them better?

The following is the beginning of a sample observation instrument students might develop for use while watching a journalist at work:

SAMPLE OBSERVATION INSTRUMENT FOR JOURNALISTS

1. What are the different things the journalist does? As you observe, keep a running list of them on the back of this page.
2. Whenever you see the journalist using one or more of the following English skills, write down next to the skill exactly what he or she is doing that involves using the skill.

ENGLISH SKILL	JOURNALIST'S ACTIVITY
a. Writing	1) (For example, an article.)
	2) _____
	3) _____
	4) _____
	5) _____
	6) _____

b. Reading	1)	_____
	2)	_____
	3)	_____
	4)	_____
c. Editing	1)	_____
	2)	_____
	3)	_____
d. Speaking Publicly	1)	_____
	2)	_____
	3)	_____
e. Interpreting	1)	_____
	2)	_____
	3)	_____
	4)	_____
f. Questioning	1)	_____
	2)	_____
	3)	_____
g. Taking notes	1)	_____
	2)	_____
	3)	_____

After developing the questionnaires and observation instruments and duplicating copies of each, students divide up responsibility for the research, either conducting it in small groups or individually.

After conducting the research, students compare their findings, tally the totals, and present their conclusions to the class. Students can then engage in one or more follow-up activities, such as the following:

1. Class can discuss the importance of learning and practicing appropriate English skills while they are in school if they are considering a career in any of the occupations researched.

   Students can identify which occupations interest them most and which English skills are most closely associated with those jobs, so they can concentrate on developing those particular skills. Class can also discuss ways in which English skills are of practical value in other occupations. Finally, students can identify English skills all citizens need as pursuers of leisure time activities.

2. Students can make use of the information gleaned from their interviews and observations to write a short story, character sketch, or poem about an occupation they researched. Their writing can focus on one or more of the following issues:

   - How English skills are used in the occupation;
   - What the advantages and disadvantages are to the occupations;
   - Whether they personally would like to explore the occupation further;
   - How the personality of employees in the occupation relates to their successful performance in and satisfaction with the job.

Activity #16

3. Students can read one or more short stories or poems which deal with occupations and analyze them not only in terms of their literary value and techniques, but also in terms of what they indicate about the jobs they describe. Example of appropriate short stories include:

   - "Flowers for Algernon," by Daniel Keyes (doctors and nurses)
   - "The Egg," by Sherwood Anderson (small restaurant owner)
   - "The Far and the Near," by Thomas Wolfe (railroad engineer)
   - "A Visit of Charity," by Eudora Welty (nursing homes)
   - "The Patented Gate and the Mean Hamburger," by Robert Penn Warren (diner operator)
   - "The Secret Life of Walter Mitty," by James Thurber (variety of jobs described which students can add to by continuing the story themselves)

   Poems students can read and discuss which treat occupations include:

   - "A Civil Servant," by Robert Graves
   - "Dolor," by Theodore Roethke (office worker)
   - "Eleven," by Archibald MacLeish (gardener)
   - "Night Shift," by Sylvia Plath (factory workers)
   - "The Gresford Disaster," anonymous (miners)
   - "What Is He?," by D. H. Lawrence (cabinet maker)
   - "Buyers and Sellers," by Carl Sandburg (laborers)
   - "A Politician Is an Arse Upon," by e. e. cummings
   - "Jazz Fantasies," by Carl Sandburg (jazz musician)

4. Students can interview people who are **consumers** of services provided by various occupations to learn whether people perceive their own occupations as others do. Students can interview parent parents, relatives, and friends about how they view such people as barbers, hairdressers, beauticians, auto mechanics, television repair persons, restaurant owners, funeral directors, law enforcement officers, teachers, plumbers, electricians, and carpenters, and salespersons in retail stores.
5. Students can invite one or more of the people they interviewed to class to discuss their occupations and the use of English skills in their jobs:

Resources:
- "Guidance Activities for Teachers of English,"
  Science Research Associates,
  259 East Erie Street,
  Chicago, Illinois 60611

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- All Occupations–
  Student/Teacher Discretion
- Health Care Professional

ENGLISH RELEVANCE:

- Research
- Report Writing
- Reading

Activity #17

Subject Area:

English

RESEARCHING CAREERS

Capsule Activity Description:

Students develop research skills by exploring one of the occupational clusters.

Teaching Prerequisites:

materials needed: none
contacts with community: tour of hospital or health care facility
approximate preparation time: ½–1 hour
approximate class time: 3½-4½ classes

English Objectives:

to develop research and reporting skills; to improve reading skills

ACTIVITY

The purpose of this activity is to develop research and report writing skills (a process) while becoming aware of career opportunities (the content). The activity is designed around careers in health because of the availability of health facilities in most communities. You can use the **process** provided and adapt the **content** to any occupational area that may be more relevant to the resources in your local community or to the interests of the students.

There are two possible ways of approaching this activity:

1. All students can do all three tasks. For this, extensive resources must be available in the community which students can utilize.
2. The class can be divided into three research components, each responsible for a different task.

Activity #17

Option Two has been illustrated in the following activity description. However, you can easily adjust the activity to follow the pattern of Option One.

Divide the class into three groups. Groups two and three should be exactly the same size. Group one can be smaller than the other two. Group responsibilities follow.

Group 1: Job Research Committee—Library resources
Group 2: Training Research Committee—Community resources
Group 3: Job Attitudes Research Committee—Personal resources

Group 1: Job Research Committee—Library Resources

Assign this committee the task of identifying the different types of occupations in the health care delivery system. The **Dictionary of Occupational Titles** and the **Occupational Outlook Handbook** are valuable sources of information. The guidance office, Career Information Center, or libraries may have these and other useful material. In addition to job titles, a brief description of the tasks performed and salary range of each job should be noted. If possible, students obtain or develop on their own a chart illustrating the interrelationships among the various components of the health care delivery system.

When all the material is gathered, the group prepares a report and duplicates it so that all class members receive a copy. Upon presentation of the report, members of the Job Research Committee answer questions from the class.

After discussing their findings from a career education perspective, the group indicates:

1. what research methods it used in its study;
2. what methods were most useful and why;
3. what other research methods might have been useful, but were not used for reasons that the group explains;
4. what other English skills were utilized in conducting the research and what problems students encountered applying them to the research task at hand.

Group 2: Training Research Committee—Community Resources

The Training Research Committee is assigned the task of finding out where, when and how to obtain job training for careers in health. The local telephone book, local medical societies and unions, and resource people in the community (the school nurse, the family doctor) can refer students to training institutions or provide information on job training.

Each student in Group 2 chooses one of the job titles from the Job Research Committee's report. No two students research the same job title. Students write or visit the training institutions to gather all possible information, including catalogs and brochures. Students can also interview health care professionals, such as the school nurse and family doctor and dentist, asking where and how they were trained. The following questions represent the minimum information they should gather:

1. What are the qualifications of the job?
2. Where can these skills be learned? Is there more than one way or one place to acquire these skills?
3. Is there any cost for the training?
4. How long does the training take? What does the training consist of?
5. What is the best time to begin the preparation?
6. What high school sources are necessary? Useful?
7. What job placement services are there?

Group 2 writes a report of its findings giving an overview of the training situation with specific institutions listed, their address, and any information peculiar to the institution (e.g., a long waiting list). Catalogs and brochures are placed in a location available to all students and the existence of these materials noted in the report. The report is duplicated so that every student receives a copy. After distribution, Group 2 responds to questions from the class. Finally, the group discusses research methods it used, as described above for Group 1.

Group 3: Job Attitudes Research Committee—Personal Resources

The task of this committee is to discover what people in these fields think about their jobs. Each member of Group 3 picks one of the jobs that was reported on. If local situations do not allow personal interviews for a job, students can conduct an interview via the mail. Telephone interviews are another possibility.

Each interview includes the following topics:

1. Job title
2. Number of years in the profession
3. Training received—where, what kind, how
4. What attracted them to the job
5. How they got their job and how most people get similar jobs
6. Personal satisfactions the job provides
7. Advantages and disadvantages to the job
8. Fringe benefits the job provides, such as social life, free or inexpensive medical care, excitement

When the interviews have been conducted, each group prepares a report of the results describing them in terms of similarities and differences among the interviewees' responses and appropriate conclusions about the nature of each occupation about which people were interviewed. This report is duplicated and added to the other two reports to make one volume on "Health Careers Resource Guide".

Finally, the group discusses interviews as a research technique—what its particular uses and limitations are and what English skills are needed to (1) develop a good questionnaire, (2) conduct a useful interview, and (3) analyze the responses to a questionnaire.

Students can then make their guide available to other students by leaving copies in the library, guidance office, career information center and announcing the guide's availability in the school newspaper or in the school bulletin.

Useful Prior and Subsequent Activities:

- Students can send copies of the guide to the local Division of Employment Security Office or local chapter of the American Medical Assoication (AMA) for comment.
- The school nurse can participate in the class discussions when the three reports are presented.

Resources: Students can read one or more of the following paperback novels which discuss the functions of nurse's aides, doctors, psychiatrists, and paraprofessionals in mental hospitals:

- **One Flew Over the Cuckoo's Nest,** by Ken Kesey
- **I Never Promised You a Rose Garden,** by Hannah Green
- **Of Human Bondage,** by Somerset Maugham (selected chapters)
- **Flowers for Algernon,** by Daniel Keyes
- **Arrowsmith,** by Sinclair Lewis
- "A Visit of Charity," by Eudora Welty (short story)

Activity #17

The following four nonfiction books describe the tasks of many health care professionals:

- **The Making of a Surgeon,** by William A. Nolen, Pocket Books (New York: 1970). Paperback
- **A Surgeon's World,** by William A. Nolen, Fawcett Books (New York: 1972). Paperback.
- **Five Patients,** by Michael Crichton, Bantam Books (New York: 1970). Paperback.
- **Encyclopedia of Careers & Vocational Guidance,** Vols. I & II, William E. Hopke, Doubleday & Company, Garden City, New York.

Students can also write for further information to:

- Assistant Administrator for Information
  Health Services and Mental Health Administration
  5600 Fishers Lane
  Rockville, Maryland 20852
- ANA-NIN Committee on Nursing Careers
  American Nurses' Association
  10 Columbus Circle
  New York, New York 10019
- National Federation of Licensed Practical Nurses, Inc.
  250 West 57th Street
  New York, New York 10019
- The American Medical Association
  535 North Dearborn Street
  Chicago, Illinois 60610
- American Nursing Home Association
  1200 15th Street, N.W.
  Washington, D.C. 20025
- American Hospital Association
  840 North Lake Shore Drive
  Chicago, Illinois 60611
- American Dental Association
  211 East Chicago Avenue
  Chicago, Illinois 60611
- American Dietetic Association
  620 North Michigan Avenue
  Chicago, Illinois 60611
- American Medical Technologists
  710 Higgins Road
  Park Ridge, Illinois 60068
- American Society of Medical Technologists
  Suite 1600, Herman Professional Building
  Houston, Texas 77025

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- All Occupations
- Job Placement Counselor
- Second Careers
- Handicapped Employees

ENGLISH RELEVANCE:

- Drama
- Communication Skills
- Public Speaking
- Characterization

Activity #18:

Subject Area:

English

GUIDANCE FOR JOB PROBLEMS

Capsule Activity Description:

Students role play guidance counselors helping clients with employment problems.

Teaching Prerequisites:

materials needed: copies of the different roles
contacts with community: visit by school guidance counselor
approximate preparation time: ½-1 hour
approximate class time: 1½-3 classes

English Objectives:

to practice public speaking skills,: to gain insight into the nature of dramatic productions and acting; to practice oral communication; to practice writing skills (optional)

ACTIVITY

In this activity students role play and (optionally) develop role plays of conflicts in the current job market which a counselor and job hunter seek to resolve. Each role play illustrates a different occupational issue, including the problem of a handicapped person seeking work, sex discrimination, and search for a second career. In addition, the activity illustrates some of the experiences a guidance or job placement counselor engages in as part of his or her occupation.

The activity can be integrated most appropriately into an English course when the class is learning effective oral communication skills, including public speaking. You can also use the activity whenever you study drama to illustrate various facets of plays, including projection, clear speaking, emoting, and ad-libbing. Finally, if students develop their own role situations, as suggested, you can use the activity to reinforce writing skills and to illustrate characterization, since in writing their roles, students will be developing short character sketches of their own.

Activity #18

Before engaging in the role plays, students can invite a school guidance counselor to class to explain how he or she counsels students who have job or career problems and to describe what kinds of work problems school guidance counselors deal with. In addition, students can invite the counselor to observe their role plays and participate in the follow-up discussion.

Follow up each role play with a discussion around the following questions:

1. Was the job problem a real one?
2. What alternative solutions might have occurred?
3. What seemed to be the real reasons behind what the players said and did?
4. How successful were the players in communicating accurately what they wanted to say to each other? Were there any noteworthy failures to communicate? If so, why did these occur? Poor word choice? Poor grammar? Incoherent statements? Failure to listen to what the other person was really saying?
5. What did the role play reveal about the character or personality of each player? How did the role play reveal character, or why did the role play fail to reveal the player's character?
6. What did the role play reveal about a guidance or job placement counselor's job? What are some of the different ways counselors can provide guidance (e.g., draw ideas out of the client or student? suggest ideas? offer to provide contacts? suggest contacts for the student to make? do research on his or her own into the problem? suggest the student do research?)
7. What skills are needed to be an effective job placement or guidance counselor?
8. Finding the "right" job and being happy at it involves not only questions of salary, hours, and working conditions. It also involves striking a balance between job requirements and the employee's personality and temperament. What personality characteristics did the job hunter in the role play reveal that would lead you to believe he or she would be particularly well or poorly suited for certain jobs? which jobs?

After the role plays, you can encourage students to develop their own role profiles in small groups, with each giving its profiles to one other group for role playing. The groups can alter the counselor's role, as well as the role of the client. Additional employment problems around which students can develop role profiles follow.

- college graduate with a B.A. in liberal arts unable to find a job;
- recent immigrant who speaks English poorly unable to find a job;
- a Ph.D. in physics who has lost his or her job and is over-qualified for most available jobs;
- high school drop-out who is having problems finding employment without a high school diploma;
- a minority group person, a skilled electrician, having difficulty joining the local electrical workers' union;
- a minority group woman, a Ph.D. in business administration, having difficulty finding work at her level because, she suspects, companies are reluctant to place a black woman in a position of responsibility over white men.

Two counselor and three client roles follow. They can be combined in different role plays. You will note that the first counselor role protrays a somewhat hostile counselor; this may result in role plays which focus more on the counselor's job than on the occupational issues being discussed. The second counselor role portrays a more sympathetic counselor; role plays using this role profile may result in more attention being given to the occupational problems confronting the client.

Before role playing the parts, students can participate in one or more of the "warm-up" exercises suggested in the section on Role Playing in the chapter on Effective Teaching Methods for Career Education at the end of the manual.

First Counselor Role:

You are Joe (or Jane) Perkins, 30 years old, married with two children, white. You have a Master's Degree in Guidance and Counseling from a major university. You took this job as an employment counselor with a local job placement agency. You are a nice person and want to help your clients, but many of them are strange to you. Some of them you find stupid, lazy, or dishonest, although you try not to show your feelings to them. You are feeling very tired this morning as you come to your desk. You see a long line of people waiting for your help. This makes you feel even more tired knowing that you will not have much time to yourself this morning to read the paper. The first client approaches your desk. You start the conversation.

Second Counselor Role:

You are Fran Smith, 53 years old, married with four children. You were an English teacher for seven years before becoming a job placement counselor with the state Department of Welfare, and you much prefer the latter occupation. You like it because you have a more personal relationship with people and more direct evidence that you are really helping them out. However, you often find your work frustrating for two reasons. First, you have to do a lot of paperwork, and this bores you and keeps you from doing what you feel should be your real job—finding jobs for people to keep them off the welfare rolls. You are also frustrated because many of the people who come to you have problems that are very difficult to solve. You really have to rack your brains sometimes to be able to suggest solutions for them and even then you're successful only some of the time. Outside your office right now is a client waiting to see you. You wonder what kind of problem this person will have and whether you'll be able to help out. You open your door and tell the person to come on in.

Client A: (Handicapped client)

You are John McNally, 25 years old, married but with no children. After graduating from high school you were drafted into the Army and sent to Viet Nam. Because of your low scores on the aptitude tests, the only training you received was how to fight. You were shot in the right leg, and it had to be amputated above the knee. You have been out of the Army for 18 months. The only jobs you have had were unskilled and temporary, such as being a file clerk and theatre ticket taker. You received no additional help from the Veterans Administration. You are a good worker and honest, but you have no skills. Depression and fear are starting to weaken your usual good spirits. You hope this employment counselor can help you because you do not know where to turn anymore. Possibly this will be the lucky break you have been looking for, but then again it might be just another dead end. You have been waiting for an hour and now it is your turn, you pick up your crutches and walk toward the counselor's desk.

Client B: (Sex stereotyping)

You are Debbie Meyers, 28 years old, divorced and the mother of three young children. You are tall and strong and have always liked physical activity. You were captain of the girls softball team in high school, where you graduated after taking a business course. Before you were married, you worked as a clerk typist in a large insurance company. You receive no support from your ex-husband whom you divorced a year ago. Welfare is not enough to support you and your children, besides, accepting welfare hurts your pride. Working as a clerk typist could support you before you were married, but not now. Anyway, you always hated working indoors. You have heard of opportunities for women in

what have been traditionally men's jobs. The telephone company has told you that they would hire you for a lineman's job except that there were no openings. You decided to come to see an employment counselor to see what he or she can do for you in helping you to find a job in construction or one of the outdoor industries. While you have been waiting, you have been looking around at the men and you notice that very few of them look as healthy or as strong as you are. It is your turn now and you have a sudden burst of confidence that all will work out well. You get up from your seat and walk briskly over to the counselor's desk. Your hand is outstretched, ready for a real firm handshake.

Client C: (Second career—over 40)

You are Jerry (Sarah) Wolfgang, 43 year old father (mother) of six children. Your wife (husband) works part-time in the high school cafeteria. Since graduating from high school, you have worked at "High Style Clothes" as a textile machine operator. The mill recently went out of business and you are without a job. Your unemployment payments have almost run out. You have been answering want ads in the local newspaper, but at every interview your age is brought up as an issue and a younger man (woman) gets the job. You are an excellent worker, with a good record. In twenty-five years you have missed less than 10 days of work due to illness. You are healthy and feel that you have at least another twenty good working years left. You are becoming desperate. This interview with an employment counselor embarrasses and depresses you. A person should be able to find his or her own work, and the counselor is so young—not much older than your oldest son, you think. As you look around the office you see other people who are "down on their luck." You do not belong here, you say to yourself, you are better than this. You hope no one who knows you will walk in. You are confused, you want to run out, yet you have no place else to turn. It is your turn to talk to that "kid" at the counselor's desk. How embarassing! You walk over to his desk not sure what to expect and introduce yourself.

Resources:

Films:

- Coronet Film Company, Coronet Building, Chicago, Illinois 60601
- "Attitude and Occupation"
  "Understanding Your Emotions"
  "How Can I Understand Others,"
  Jan Hardy Organization,
  2821 East Grand Boulevard,
  Detroit, Michigan 48211

Filmstrips:

- "Failure: A Step Toward Growth,"
  Guidance Associates, Pleasantville,
  New York 10570
- "The Challenge of Change,"
  William E. Matthews Company
  Pittsburgh, Pennsylvania 15222

Comments from Teachers and Students after Using the Activity

OCCUPATIONAL FOCUS:

- Teacher
- Tutor

ENGLISH RELEVANCE:

- Reading
- Writing
- Spelling

Activity #19

Subject Area:

English

PEER TEACHING

Capsule Activity Description:

Students tutor younger students or classmates in reading, writing, spelling and other language arts skills.

Teaching Prerequisites:

materials needed: none
contacts with community: none
approximate preparation time: ½-2 hours
approximate class time: 1-3 classes

English Objectives:

to practice reading, writing, and spelling skills.

ACTIVITY

In this activity, students tutor classmates or younger students who need help with particular English skills, such as reading, writing, and spelling. You can implement the activity at any time in your English course, since it involves students in practicing the two most important English skills of reading and writing which are constantly being taught in English courses.

In terms of career education, the activity provides students with the opportunity of experiencing some of the tasks a teacher performs.

You can arrange the tutoring sessions in your own classes by identifying the students who need help and other students who are skilled and mature enought to provide help. By contacting teachers of younger students, you can learn whether they have students who both need help with certain English skills and would also be able to improve on these skills with assistant from an older student. The

tutoring sessions can be held during study periods or before or after school. Your presence may be needed depending on the maturity of the student-tutors and the difficulty of providing assistance in the particular skill being taught.

When you have identified volunteers in your class who want to tutor and students who need and want to be helped, spend a half hour with the student-tutors discussing how they can help the tutees to improve the particular English skill areas in which the latter are deficient. For example, if a student needs help in paragraph formation, instruct the tutor first to learn what the student's **interests** are (something students often will not communicate to a teacher) in order to find a way of **motivating the student** to write paragraphs. For example, it may turn out the student likes westerns. If this is the case, the tutor can then encourage the student to write down adjectives and then descriptive phrases describing some of the characters in the westerns he or she has seen or read about. The tutor then has the student add verbs to these adjectives and adjectival phrases to form sentences. Finally, the tutor connects the sentences into a logical order, starting with an opening sentence which indicates what will be said in the paragraph, and thereby forms a paragraph. Stress to the tutor that the great advantage he or she has over the teacher is the ability to find out what the tutee's interests are and to use these interests as the motivational basis for learning the needed English skill.

Student-tutors can engage in one or more follow-up activities concurrent with or after the tutoring sessions:

- Tutors can meet together on a regular basis to share experiences and discuss their feelings about tutoring in terms of:
  - difficulties encountered,
  - improvements noticed,
  - satisfactions derived, and
  - frustrations experienced.
- Students can keep a diary of their experiences, taking notes after each tutoring session. Tutees can also be encouraged to do the same. At the end of the tutoring sessions, the diaries can be compared. They can also be shared with other members of the class.
- At the end of the tutoring experience, each student can develop or be given a set of questions about their work to respond to in writing or orally to the class or to you. Sample questions follow.
  - Describe the specific skill areas in which you provided assistance.
  - How did you provide the help?
  - Describe the aspects of tutoring that you enjoyed and those you did not.
  - Discuss what personality characteristics make a person "good" with children or youngsters.
  - Do you feel you have those characteristics? How can you tell?
  - What English skills did the tutoring help **you** to develop or improve?

After the tutoring sessions, you identify for the student-tutors aspects of teaching which were **not** illustrated in their volunteer work, such as:

- keeping up with new developments in your field
- handling discipline problems
- developing quizzes and tests
- correcting papers

- giving grades
- preparing course lesson plans
- attending department and other school meetings.

Resources: The following books, all in paperback, are autobiographical accounts by teachers of their experiences teaching and tutoring.

- **The Way It Spozed to Be,** by James Herndon (Bantam)
- **36 Children,** by Herbert Kohl (Signet)
- **The Open Classroom,** by Herbert R. Kohl (Vintage)
- **Teacher,** by Sylvia Ashton-Warner (Bantam)
- **Death at an Early Age,** by Jonathan Kozol

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Mass Media Positions
- News Broadcaster
- News Writer/Editor

ENGLISH RELEVANCE:

- Public Speaking
- Communication Skills
- Writing/Editing
- Journalism
- Drama/Plays

Activity #20

Subject Area:

English

COMMUNICATING THE NEWS

***Capsule Activity Description:**

Students produce a news broadcast.

Teaching Prerequisites:

materials needed: video tape equipment or tape recorder and tapes; various props
contact with community: visit to television or radio studio
approximate preparation time: 1-3 hours
approximate class time: 5-10 classes

English Objectives:

to develop public speaking skills;
to practice learning to communicate effectively;
to practice editing and writing skills.

ACTIVITY

The purpose of this activity is to place the communication skills developed in an English class into a realistic context. The activity is more than a simulation; it is an actual "hands on" experience with a variety of skills and occupations involved in preparing a newscast.

A tour of the local TV or radio station can precede the activity. Many stations have people who may also volunteer to aid students by reviewing their work during the preparation or after its completion.

Since the activity as described below requires considerable class time, you can implement selected parts of it instead of the entire process. For example, students can engage in just the news selection exercise.

*This activity has been revised from an activity developed by Martin W. Esses. The original activity is part of *Career Exploration Program, Curriculum Guide*, Ohio State Department of Education (Columbus, Ohio: 1971)

Activity #20

The outline of the activity follows.

CONCEPT	METHOD
A. Introduction	**STATEMENT:** As TV viewers, all of us have watched the news. Perhaps some of us have considered newscasting in making a career choice.
1. Purpose of study	**STATEMENT:** For the next two or three weeks, we will be doing these things:
a) plan a newscast b) develop a newscast c) produce a newscast	1. planning a newscast 2. developing a newscast 3. producing a newscast
	Through these activities we hope to learn whether this might be a wise career choice for us.
2. Alternate plan	NOTE: If video tape is not available, this unit can be developed as a radio newscast. In radio, greater emphasis would be placed on voice, inflection, timing, and other audio services.
3. General Instructions	General Instructions: 1. Active participants will work as a team. The size of the team will depend on the item to be done and the size of the class. 2. Viewers will evaluate. 3. Participants and viewers will alternate to allow all students to serve in both capacities. 4. Newscast will be limited to 15 minutes. 5. Duration of unit will be two to three weeks.
B. Organization	In planning the newscast, we will need:
1. Camera operator	**A camera operator.** Use one who has been trained for this if possible. Camera will be set up to go before each presentation. Where video is not available, this part can be omitted.
2. News selectors	**News selectors.** Four teams will be needed to select news from: a) local news–editorial b) weather c) sports d) commercial

CONCEPT	METHOD
a) Local news	**Local News–editorial.** This team will gather straight news items from newspapers, magazines, school paper or by personal interview. Items should be considered newsworthy and of interest to student.
b) Editorials	**Editorials.** This team gathers editorials from the media or develops its own editorials based on the news items the local news team collects.
c) Weather	**Weather.** This team will gather current weather, news, and forecasts from newspapers, TV or radio newscasts. They must have a plan to update this material.
d) Sports	**Sports.** This team will gather sports news items from newspapers, school paper, interviews with coaches and sports figures. Preferably, they should be knowledgeable in sports areas.
e) Commercial	**Commercial.** This team will gather material for a commercial and provide the props for the background of the newscast. Commercial and background should be relevant and of interest to students. There should be at least one person in this team who has some art ability to design the set.
f) General Instructions	Where applicable, news selectors should become aware of good interview techniques by: 1. Making an appointment with interviewees 2. Pre-planning the interview (questions to be asked) 3. Taking notes 4. Writing the item from notes.
3. News Editors	**News Editors.** A news editor will be assigned as a team leader for each news selector category: local, weather, sports, and commercial. It will be his job to summarize selected items. After summarization, summaries will be organized in order of presentation.
4. Script Writers	**Script Writers** will:
a) select final summarized material	a) select summarized material
b) write material	b) write script from selected summaries
	Script writers should have the ability to write good dialogue.

CONCEPT	METHOD
5. Producer a) organize script and background c) rehearsal d) time newscast	**Producer** will: a) organize the final scripts b) be responsible for the final props c) conduct a rehearsal d) time the rehearsal newscast This person should have the ability to organize from the particular to the general to present a unified whole.
C. Casting	Ideally, it would be desirable for students to volunteer for various jobs represented in the newscast. Students should be prompted to consider their skills and desires in making selections. The teacher should strive for total participation in selecting people for these jobs. The elements of "try-outs" could be employed.
D. Preparation	1. Selects a place for the telecast or broadcast (if other than regular English room) 2. Any materials (live or simulated) which can be appropriated should be brought in. 3. News items can be selected from a newspaper or can be reported. These may have to be condensed and surely edited. Written materials for commercials must be prepared. The work for this writing must be equitably distributed. 4. If the simulation is a telecast, rather than a radiocast, props may be made by members of the class. 5. Illustration and/or art work involving the commercials must be assigned. 6. The "time" factor and coordinating should be a function of the production manager. 7. The engineer will coordinate the production as to the place, equipment, and area of the room.
E. Presentation	Consideration should be given as to whether the program will be confined to the classroom or shared with other elements of the student body. Having guests or sharing the experience outside the classroom would enhance the performance and probably improve the quality.

Following the activity, students engage in an analysis of what they learned. Issues they can address follow.

1. What is it like to be a: news reporter, camera operator, editor, producer? What do each of these people do? What is satisfying and what is dissatisfying about their jobs?

2. What English skills do each of these people need to perform their jobs well? Reading? Writing? Editing? Oral communication? Summarizing? Public speaking? Questioning?
3. What preparation and training are needed to do these jobs well? How many of the needed skills can be learned or must be learned "on the job"?
4. In the roles you played, were any jobs taken exclusively by or assigned only to boys or girls? Did any girls handle the sports writing, for example? Why are some news production occupations held primarily by members of one sex? Should this be changed? If so, how?
5. Did any of the news stories or editorials reveal sex or ethnic biases? How can sex and ethnic bias be avoided in the news?

Useful Prior and Subsequent Activities:

- Students can inquire whether the type of organization illustrated in the simulation can be applied to announcements carried on in the school building
- Students can inquire of local telecasting or broadcasting stations whether they can accomodate student volunteers.

Resources: Interesting, provocative, and informative paperback novels that describe journalism and journalists are:

- **Facing the Lions,** by Tom Wicker,
- **The Last Hurrah,** by Edwin O'Connor,
- **The Sun Also Rises,** by Ernest Hemingway,
- **All The King's Men,** by Robert Penn Warren.

A good account of journalists covering a presidential election may be found in the paperback volume, **The Boys on the Bus,** by Timothy Crouse.

For further information students can write to:

- American Women in Radio and Television
  1321 Connecticut Avenue, N.W.
  Washington, D.C. 20036
- Newspaper Guild of New York
  133 W. 44th Street
  New York, New York 10036
- Newspaper Institute of America
  2 Park Avenue
  New York, New York 10016

Comments from Teachers and Students after Using the Activity:

Section Three: MATHEMATICS

1. ACTIVITIES SUMMARY

This section of the manual contains the following ten activities, sequenced very generally from easiest to most difficult.

21.* **TO BE A TEACHER:** Students discuss instructional strategies for teaching mathematics and then apply these methods to in-class and/or after-school math teaching projects.

22. **CALCULATE YOUR TRIP:** Students visit a travel agency and then plan an imaginary trip and write trip-related mathematical word problems.

23. **DON'T FENCE ME IN:** Students listen to people whose jobs involve fence building and then do calculations related to the mathematics concepts used in barrier construction.

24. **MATH IN THE HOME:** Students research different household management projects and apply mathematical concepts in a practical setting.

25. **DOW, JONES, AND EINSTEIN:** Students study various aspects of the financial world and "invest" in the stock market with imaginary money.

26. **BUYING CHARTS AND GRAPHS:** Students research and interview buyers in different industries, graph their findings, and present them to the class.

27. **FIGURING OUT OUR HEALTH:** Students visit health facilities to study how their statistics are recorded and then discuss how these statistics are obtained and used to improve community health.

28. **POLLING THE PUBLIC:** Students learn about the sampling process by developing and administering a poll.

29. **SURVEYING CAREERS:** Students interview and/or research careers of architects, civil engineers and land surveyors, and present findings to class.

30. **COMPUTERS:** Students research questions and/or conduct projects concerning the development of computers and computer programming.

2. INTRODUCTION

As a senior high mathematics teacher, you should consider career education as an integral and appropriate component of your teaching which will **increase your students' ability and motivation to learn mathematics skills.** Moreover, as a mathematics teacher, you are in a good position to integrate career education activities into your courses because you teach a variety of skills which are essential components of many occupations, from engineering to survey design.

How will the integration of career education activities into your mathematics courses help you achieve your subject area objectives? There are at least two answers to this question.

1. Many of the **skills** in mathematics curricula will be developed or reinforced through the use of career education activities, including such mathematics skills as sampling, logic, scale drawing, and working with fractions, linear functions, word problems, algorithms, and significant numbers. Career education activities can help students comprehend the theoretical aspects of mathematics by seeing or engaging in the **practice** of mathematics. For example, if your class designs, administers, and analyzes a poll of members of a particular occupation, the students will, in a realistic context, be developing skills in sampling, graphing, averaging, addition and division, as well as learning about such concepts as the mean and median.

*The activities in this section of the manual begin with number 21 because the numbering continues sequentially after the last activity (number 20) of the previous section of English activities.

2. By including career education activities in your courses, you will increase your students' **motivation** to study and develop mathematics skills. By studying careers related to mathematics in exciting action-oriented ways, students will be stimulated to delve further into the field related to the occupations they are investigating. For example, students who study engineering as a career by interviewing engineers and simulating some of their tasks will probably want to learn more about the concepts of measuring, geometry, and scale drawing. In this manner, career topics have the attractiveness of **"relevance"** for studying and learning mathematics skills. Activities dealing with concrete, current occupations of personal concern to your students can add motivation to the disaffected as well as involved student who wants to know what mathematics has to do with the world of an adult: "Can studying linear functions get me a job?" is the unspoken query of many students today.

How can integration of career education with mathematics operate in practice? Let's look briefly at a hypothetical Sample Week's Lesson Plans to see how you can integrate career education activities into your mathematics courses:

3. SAMPLE WEEK'S LESSON PLANS

The example of a week's lesson plans on the following page is applicable for any high school mathematics course which plans to include graphs of linear equations at some time during the year. The lesson plans presume that the students have already been introduced to graphing ordered pairs in another mathematics course; otherwise, additional time might be needed to successfully complete the material covered in the second class period. Homework assignments in the lesson plans refer to **work due that class period** and not work to be assigned that night.

A teacher has decided to integrate a career education activity on developing an awareness of careers in marketing, namely Activity #26, into his or her fourth class period of the week. The activity is introduced to the class one or two weeks prior to introducing graphs of linear equations. At that time, the teacher divides the class into preassigned groups (referred to in the lesson plans) and presents the preliminary instructions as outlined in Activity #26. The teacher acts on a regular basis as a consultant to the different groups during the one to two week period giving special attention to the type of data the students collect.

This activity reveals to students one aspect of a career in marketing and thereby achieves a **career education objective**. Graphing equations with respect to an "x" and "y" axis is an abstract concept for students. The activity will provide them with a concrete application of graphs which, aside from demonstrating a practical application of graphs, will reinforce their knowledge of graphing linear equations and thereby help achieve **a mathematics objective**.

SAMPLE WEEK'S LESSON PLANS

(An illustration of one way to integrate a career education activity into your course.)

HOMEWORK ASSIGNMENT	DESCRIPTION OF CLASS ACTIVITY
Students collect examples of graphs from magazines and newspapers. Pre-assigned groups meet again to prepare for their presentation.	• Class introduced to the concept of first and second coordinates; solution of equations in two variables. • Class divides into pre-assigned groups. Each group is given an identical listing of five equations in two variables from which they are to discover three solution sets for each equation. Groups should be encouraged to compete to finish first with correct solutions. Check all of the groups' answers.
Students read textbook section on solutions of equations in two variables and complete problems based on their reading.	• Review homework. • Teacher reviews the Cartesian coordinate system and the procedure for graphing an ordered pair. Students then graph the solution sets from the homework assignment and then compare the form of the equation with its corresponding graph. Teacher introduces the general form of a linear equation. • Students are given several equations to graph. Not all are linear equations. Instruct students to examine the form of the equation, guess whether it is a linear equation, determine at least three solution sets and then graph the solution sets.
Students construct graphs from data given to them by the teacher and graphs of other linear equations.	• Review homework with special attention given to graph constructed from data given by teacher. • Class analyzes graphs obtained from magazines and newspapers. Emphasis should be placed on graphs relating sales or cost of products over some time interval. • Class divides into pre-assigned groups for analyzing data collected over the past 1½ weeks. Teacher acts as an advisor, helping students organize their data into ordered pairs for graphing.
Students complete their graphs from data collected through interviews of buyers. Students make final plans for their group presentations.	• Groups make their presentation to the class as described in Career education Activity #26. • Teacher reinforces concept of reading and interpreting graphs and shows how changes between consecutive sets of ordered pairs might be recorded.

SAMPLE WEEK'S LESSON PLANS

(An illustration of one way to integrate a career education activity into your course.)

HOMEWORK ASSIGNMENT	DESCRIPTION OF CLASS ACTIVITY
Each student writes a word problem relating to buying in his or her particular business interest. Students study "data" graphs and record any changes that may have taken place between consecutive sets of ordered pairs.	• Students examine their "data" graphs and try to discover a method for indicating the change that occurs between any two ordered pairs as a numeral. • Teacher introduces the concept of the slope of a line.

4. CROSS REFERENCE

The cross reference below identifies by number activities which treat particular occupational issues and jobs (listed across the top of the page) and activities which reinforce specific mathematics topics and skills (listed down the left-hand margin of the page). By using the reference, you can locate activities by specific jobs or occupational issues which you may want to teach or by particular mathematics topics and skills which you feel are relevant points in your curriculum at which to introduce a study of careers.

MATHEMATICS

CROSS REFERENCE

TOPIC OR SKILL / OCCUPATIONAL FOCUS	Architect	Bank Manager	Bank Teller	Certified Public Accountant	Civil Engineer	Computer Programmer	Computer Technician	Fence Builder	Financial Analyst	Health Careers	Homemaker/Home Economist	Land Surveyor	Pull Taker or Tree Surgeon	Personnel Director	Purchaser	Statistician	Stockbroker	Teacher	Travel Agent	Travel Industry
Algebra						23														
Algorithms					30	30	23													
All Areas																	21			
Area						23			24											
Arithmetic						23			24									22	22	
Averaging								27					27							
Binary System					30	30														
Conversion (Metric)									24											
Conversion (Money)																		22	22	
Computer Programming					30	30														
Computer Science					30	30														
Decimals																		22	22	
Deductive Proofs																		22	22	
Divisions		25	25	25				25							25					
Flow Charts					30	30														
Geometry	29			29			23		24	29								22	22	
Graphing		25	25	25			23	25						26		25				
Interest		25	25	25				25		24						25				
Inverse Variation							23													
Logic					30	30														
Map Reading																		22	22	
Mean, Median								27					27							
Measurement	29			29					24	29										
Multiplication		25	25	25			23	25								25				
Percents		25	25	25				25	27	29			28	27		28	25			
Perimeter							23													
Sampling													28			25				
Sequencing																		22	22	
Simple Equations																		22	22	
Statistics								27					28	27		28				
Subtraction		25	25	25				25								25				
Trigonometry	29			29						29										
Word Problems									24											

OCCUPATIONAL FOCUS:

- Teaching

MATHEMATICS RELEVANCE:

- All Areas

Activity #21

Subject Area:

Mathematics

TO BE A TEACHER

Capsule Activity Description:

Students discuss instructional strategies for teaching mathematics and then apply these methods to in-class and/or after-school math teaching projects.

Teaching Prerequisites:

materials needed: none
contacts with community: none
approximate preparation time: 1-3 hours
approximate class time: maximum ½ class per project

Mathematics Objective:

to reinforce and develop math skills.

ACTIVITY

This activity is divided into two parts, class discussion regarding teaching problems and methods and peer teaching. The purpose of the first part is for students to:

- develop empathy for teachers in order to better understand the problems faced by teachers;
- identify qualities that people need to be good mathematics teachers; and
- identify appropriate teaching techniques for mathematics classes.

The second part allows students to teach mathematics to their peers by participation in one or more special projects. These projects are designed to motivate, reinforce and develop their mathematical skills.

Activity #21

Although the activity can be introduced at any time in a mathematics course, it is best integrated into a math curriculum early enough to allow the projects to take place over a long period of time.

Part one. The activity begins with students identifying what they feel the mutual responsibilities of teachers and students are to each other. Students break into small groups to identify and examine activities mathematics teachers engage in, such as:

- keeping up with new developments in the field
- conveying concepts to students
- helping students develop mathematics skills
- developing quizzes and tests
- correcting homework
- giving grades
- providing after school help
- preparing course or lesson plans
- coping with discipline problems

The small groups identify the satisfactions and frustrations each of these activities can provide for mathematics teachers. In particular, each group identifies the most effective instructional strategies for teaching math, such as lectures, homework, discussion, audiovisual methods, and peer teaching. A large class discussion follows in which students analyze each group's conclusions and reach a consensus on what mathematics teachers do, what satisfactions and frustrations the profession provides, and what instructional strategies are effective for teaching mathematics knowledge and skills. You can elaborate on students' conclusions based on your personal experience. In addition, you can discuss the claim, "Those who can, do; those who can't, teach." Do some people become teachers because they can't find or be successful in occupations such as statistics, engineering, computer programming, etc.?

Part two. Describe the following projects to students and instruct them to choose one they would like to engage in:

- Tutoring Project
- Group Instruction Project
- Student-Teacher Project
- Student Aide Project

Class breaks into small groups, each group concentrating on the same project. If possible, implement the projects over a long time period. For example, students who choose the tutoring project need not all be assigned to tutor in the same month. Instructions for each project follow.

Tutoring Project. Students who select this project tutor students in mathematics, preferably younger students or students who are not in their mathematics class. Students who select this project:

- tutor in his/her weakest area, if possible;
- discover the subject area the students need to be tutored in from the teacher at least two days prior to the tutoring session;

- review the material and learn it;
- ask the teacher for suggestions as to the best approach for teaching the subject matter to be taught;
- make use of what was learned in the small group discussion related to student-teacher relationships;
- arrange the time for the tutoring session;
- conduct at least two tutoring sessions.

It is your responsibility to find students who need tutoring and determine the subject area the students need to be tutored in. If there are no students in your own classes who wish to be tutored, you can make arrangements with your department head and/or other math teachers to find students who need tutoring. Tutoring can be done during a student's unassigned period or after school. You may need to be available to assist the student who is doing the tutoring.

Group Instruction Project. A group of no more than 5 students teaches each other advanced or unusual areas of mathematics. For example, computer language, topology, non-Euclidean geometry, figurate, amicable, perfect, deficient and abundant numbers, numerology, Fibonacci numbers, magic squares, Napier's rods, Pascal's triangle, the golden rectangle and golden section, four-dimensional geometry, polar coordinates, Boolean algebra, matrix algebra, continued fractions, functions, trigometric functions of the right triangle, Archimedes' method of Exhaustion, probability, moebius strip and the Klein bottle. Students who select this project should:

- be responsible and well disciplined students;
- be willing to work with others in a group structure;
- decide on a topic area as a group and obtain your permission to proceed with this topic;
- research the materials separately or as a group;
- explain and demonstrate the concepts to each other as a group;
- present a brief written report to the teacher which includes:
  - a description of the material learned;
  - a list of all references used in their research;
- give an oral presentation to the class (optional).

Student Teacher Project. Students, working in pairs, teach a segment of "their own" mathematics class. You can assign the topic or students can choose one from the list provided in the Group Instruction Project. Students who select this project:

- work closely with the teacher in preparing their lesson; and
- rehearse their presentation in front of the teacher at least two days prior to their teaching it.

Student Aide Project. For this project, distribute a worksheet with the answers to the problems to the class. Students then aid you in helping other students solve the problems on the worksheet when difficulties arise. Instruct the class to:

- do the worksheet by themselves, checking their answers or problems are done;
- raise their hand when they have an incorrect answer after attempting the problem a second time.

The student aides then:

Activity #21

- ask the student for an explanation of the work that led to the incorrect answer;
- point out any careless errors; and
- help the student **discover** the correct method for solving the problem by asking leading questions. (The student aide should not **do** the problem **for** the student.)

Give the student aides a copy of the worksheet at least two days prior to its distribution, so that they may complete each problem on the work in advance and be able to consult with you on any problems they were not abie to understand. Do not use more than two teacher aides for each worksheet and do not lecture on the material covered in the worksheet prior to its distribution. The class should be assigned reading on the worksheet material prior to its distribution. A sample worksheet follows.

Sample Worksheet

ALGEBRA WORKSHEET

1. State the degree of each of the following terms.
   (a) $xy^2 + y^2$ (b) $xy^2 + y^2 + 5$ (c) $2x^3y^2$
   (d) $2x^3y^3z^5$ (e) $2x^3y^2z^5 + xy^2$ (f) $2x^3y^2z^5 + xy^2 - 7$
2. Simplify:
   (a) $(b^3 - 2b^2 + 3b + 4) - (b^3 - 4b^2 + 2b - 1)$
   (b) $5t + 3s - 2(2t - 4s) + 3(5s + 8t)$
   (c) $2a^2 - 3(ab + 3b) + 2a(5a - 4b) - (6a - 5b)$
3. Solve and check the following:
   (a) $2 - 3(2x - 5) = 2x - 7$
   (b) $4y - 1 = 31$
   (c) $-343 + 9n = 2n$
   (d) If $A = \frac{1}{2}h(a + B)$, find a when $A = 65$, $b = 5$ and $h = 10$.

FOLD HERE

SPECIAL of the DAY: Worth 4 points on the next test. You must work on this problem by yourself. All work must be shown. Copy this problem over on another piece of paper and pass it in when you have finished.

Solve the following equation under the set of real numbers.

$$18 - 5\left(\frac{1}{n} + 2\right) = 2$$

FOLD HERE

ANSWERS

1. (a) 3
   (b) 3
   (c) 5
   (d) 10
   (e) 10
   (f) 10
2. (a) $2b^2 + b + 5$
   (b) $9t + 265$
   (c) $12a^2 - 11ab - 12a + 14b$

Prior Useful and Subsequent Activities:

- Continue projects throughout year by having students choose different projects to develop games to help reinforce mathematics learning experiences.
- Students can interview school mathematics teachers about their profession.

Resources:

- **Value Exploration Through Role Playing,**
  Robert Hawley,
  Hart Publishing Company, Inc.
  New York, 1975, paperback.
- American Federation of Teachers
  1012 14th Street NW
  Washington, D.C. 20005
- National Education Association
  1201 16th Street NW
  Washington, D.C. 20036
- "Guidance Activities for Teachers
  of Mathematics"
  Science Research Associates
  259 East Erie Street
  Chicago, Illinois 60611

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Travel Agent
- Travel Industry Representative

MATHEMATICS RELEVANCE:

- Geometry
- Arithmetic
- Decimals
- Conversion (money)
- Map Reading
- Deductive Proofs
- Simple Equations
- Sequencing

Activity #22

Subject Area:

Mathematics

CALCULATE YOUR TRIP

Capsule Activity Description:

Students visit a travel agency and then plan an imaginary trip and write trip-related mathematical word problems.

Teaching Prerequisites:

materials needed: none
contacts with community: visiting a travel agency
approximate teacher preparation time: ½-1 hour
approximate class time: 1½-2 classes

Mathematics Objective(s):

to develop concepts of money conversion, time zone factors, map reading, simple equations, sequencing, and writing deductive proofs.

ACTIVITY

This activity introduces students to careers in tourism and provides students with an opportunity to develop their planning skills. It can best be integrated into a mathematics curriculum following exercises designed to write deductive proofs, develop simple equations or improve skills working with decimals.

The deductive proof is a sequence of steps leading from the given information to the proof of the hypothesis. Although some steps in the proof may be interchanged without changing the validity of the proof, there is some information that must precede other information. This is also true for planning a trip. There are certain givens (the amount of money you have to spend, where you wish to travel, etc.) and there is a final destination that is to be reached.

Simple equations can be developed based on travel across time zones and the rate of exchange of currency. For example:

Activity #22

- If your trip takes you across 12 time zones, then the equations $y=x+12$ and $y=x-12$ can be developed where x represents the time at your point of departure and y represents the time at your destination.
- The equation $C=1.005A$ and $A=\frac{200}{201}C$ can be developed where C represents the number of Canadian dollars and A represents the number of American dollars based on the exchange rate that $1 Canadian = 1.05 American dollars.

Students can conduct the activity either in small groups, as a class, or as an individual independent study project.

Students begin by identifying one or more travel agents who are interested in being interviewed. Students can identify them by soliciting names of travel agents from staff who have taken trips. Students can also consult the Yellow Pages for travel agencies which may be interested in having students pay them a visit to ask questions. If field trips are not feasible, students can invite one or more travel agents to come to class to discuss their jobs and answer questions from the class. In addition, students can invite citizens who have taken trips and made use of travel agents to come to class to discuss what the travel agent did for them.

Prior to visiting the agencies or before a travel agent comes to class, students develop a set of questions they would like to ask, such as the following:

1. How do you go about planning a trip for an individual traveler? for a group? for foreign travel? for domestic travel?
2. How do you make arrangements with airlines and hotels?
3. What information do you need to obtain from travelers, such as time schedules, method of payment, number in the party, etc.?
4. What information do you provide to travelers, such as local health problems in the places to which which they are traveling? weather conditions? passport and visa problems? places to visit? tips about language problems? local customs to be aware of?
5. How important is it for you to be familiar with the places of interest at the locations to which tourists travel?
6. What currency problems can tourists expect to encounter and how do you help them avoid or solve them?
7. What fringe benefits are there for you as a tourist agent—for example, free trips or trips at reduced rates?
8. What training did you need to become a travel agent and how did you get the training?
9. What are the disadvantages to being a travel agent? For example, do you receive complaints from tourists for whom you have made unsatisfactory bookings?

After conducting the interviews, students divide into small groups and plan an imaginary trip involving a minimum of two modes of transportation, one change of currency, and one time change. Plans include include arrangements that have to be made with all the different people and places whom travel agents have to contact, including hotels, ground transportation providers (e.g., car rental agencies, bus companies), airlines, and catering services. Groups are given at least a week in which to conduct the research research necessary to plan their trip, including:

- determining departure and arrival times of all modes of transportation used;
- identifying appropriate hotels and their rates;

- "securing" ground transportation, such as bus service and car rental arrangements;
- determining how much spending money will be needed for the trip and how much of that money should be in the form of travelers' checks and in foreign currency;
- noting all time changes that will occur;
- outlining the different ways the trip can be financed;
- identifying any special problems associated with travel to the destination chosen—such as language barriers and health problems; and
- identifying how and when to secure passports and visas.

Each group writes on the basis of its research a detailed "Travel Plan" and then develops at least two word problems that relate to:

- conversion of foreign currency to American currency;
- time zone changes; or
- arrival and departure times and distances traveled.

For example,

> "Mr. and Mrs. Smith want to go to France. Their travel agent has to call France to verify their travel plans. He or she has to call France at 10:00 a.m., European time. How can the agent determine what time to call local time?"

Groups then present their travel plans to the class for discussion and comparison, present their word problems for solution by other class members, and discuss the occupation of travel agents in terms of work involved, skills needed, and advantages and disadvantages to the job.

Groups conclude the activity by role playing five-minute travel dramas around one or more of the following situations:

- a currency exchange problem;
- a time zone problem;
- "tourists" planning a trip with a travel agent; problems the tourists can present to the agent can include limited finances, limited time to travel, health problems (can't travel to cold or wet climate, for example), transportation problems (fear of flying, for example) or language deficiencies.

After each role play, the class discusses what the activity revealed about tourism as a career and how it uses mathematics skills.

Resources: Students can write for further information to:

- Travel School of America
  1406 Beacon Street
  Brookline, Massachusetts 02146
- American Society of Travel Agents
  360 Lexington Avenue
  New York, New York 10017

Comments by Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Fence Builder
- Fencing Contractor

MATHEMATICS RELEVANCE:

- Algebra
- Geometry
- Arithmetic
- Area
- Perimeter
- Graphing
- Inverse variation
- Algorithms
- Multiplication

Activity #23

Subject Area:

Mathematics

DON'T FENCE ME IN!

Capsule Activity Description:

Students listen to people whose jobs involve fence building and then do calculations related to the mathematics concepts used in barrier construction.

Teaching Prerequisites:

materials needed: graph paper, rulers
contacts with community: visits by people who build fences as part of their work
approximate preparation time: 1-2 hours
approximate class time: 1-2 classes

Mathematics Objectives:

to understand the concept of area and perimeter;
to learn the mathematical concepts involved in fence building;
to learn how to graph first and second degree equations.

ACTIVITY

This activity can be integrated into your mathematics class at several points during the year, but most easily and appropriately when the concepts of perimeter and area are introduced, when linear equations are being graphed, or when inverse variation is being introduced.

Invite a skilled fence builder to speak to the class. Contacts can be made through either a student whose parent knows a fence builder or by telephoning a large fence company found in the telephone directory. Supply the speaker in advance with the questions students will be asking.

Students can ask the guest speaker the following types of questions:

1. Where did you learn the skill of fence building?
2. How is fence building an integral part of construction work? of farming?

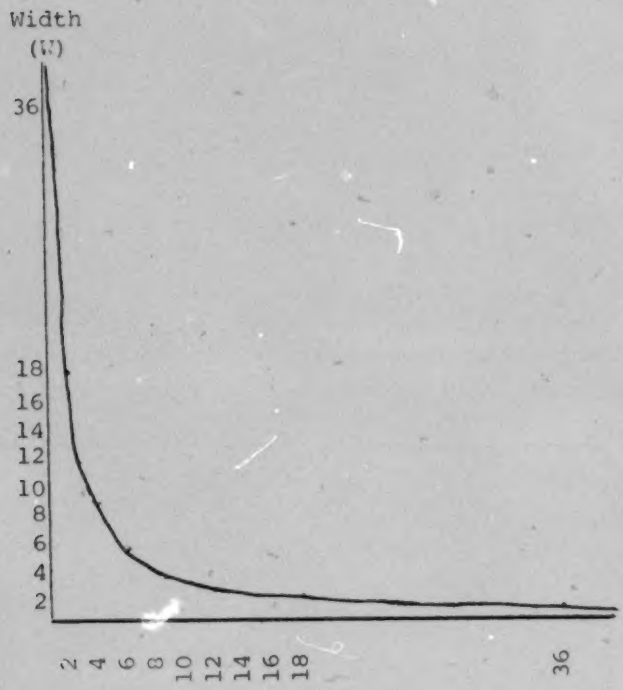
3. What equipment does one need to stake out a fence? (e.g., axe, bank blade, tape, flags, flagpole, stakes, string, level)
4. How is this equipment used? What hazards and difficulties are involved?
5. How does one stake out a fence line in:
   a. Heavy brush and undergrowth?
   b. Open fields?
   c. Open rolling or hilly areas?
   d. With the contour of the land?
6. What mathematic principles (algebraic and geometric) are involved in staking out a fence line on a straight or curved surface?
7. What are some different types of fences? (e.g., electric, barbed wire, board, snake, cyclone, brick, picket, stone)
8. What are the advantages and disadvantages of each of these different kinds of barriers?
9. What is the current cost for constructing the different types of fences?
10. Is it satisfying to be working outdoors and with your hands? Do you have problems with the weather?
11. Is employment in your job seasonal? If so, what do you do during the "off" season?
12. Does your job require physical strength?
13. Are you and do you have to be a union member?

After the interview with the fence builder, ask the students to draw on a sheet of graph paper at least three different rectangles with an equivalent area. Students then calculate the perimeter of each rectangle and the cost required to fence in the area of each rectangle. For example:

- Students draw at least three different rectangles whose area is 36 square units. Some possible dimensions are 1 x 36, 4 x 9, and 6 x 6. The respective perimeters are 74 units, 26 units, and 24 units. If one unit is equal to one foot and assuming the cost of a four foot chain fence is $4.40/foot the respective costs are $325.60, $114.40, and $105.60. The following questions may be raised:

1. If a rectangular area to be fenced in (such as 36 sq. ft.) remains constant, what are the possible combinations of lengths and widths that can be used?
2. What is the largest perimeter that will enclose this rectangular area?
3. What is the smallest perimeter that will enclose this rectangular area?
4. What is the largest cost of a fence that will enclose this rectangular area?
5. What is the smallest cost of a fence that will enclose this rectangular area?
6. What type of rectangle will always provide you with the smallest perimeter and smallest cost?
7. What happens to the length of the perimeter as the length of one side of the rectangle becomes smaller and smaller?

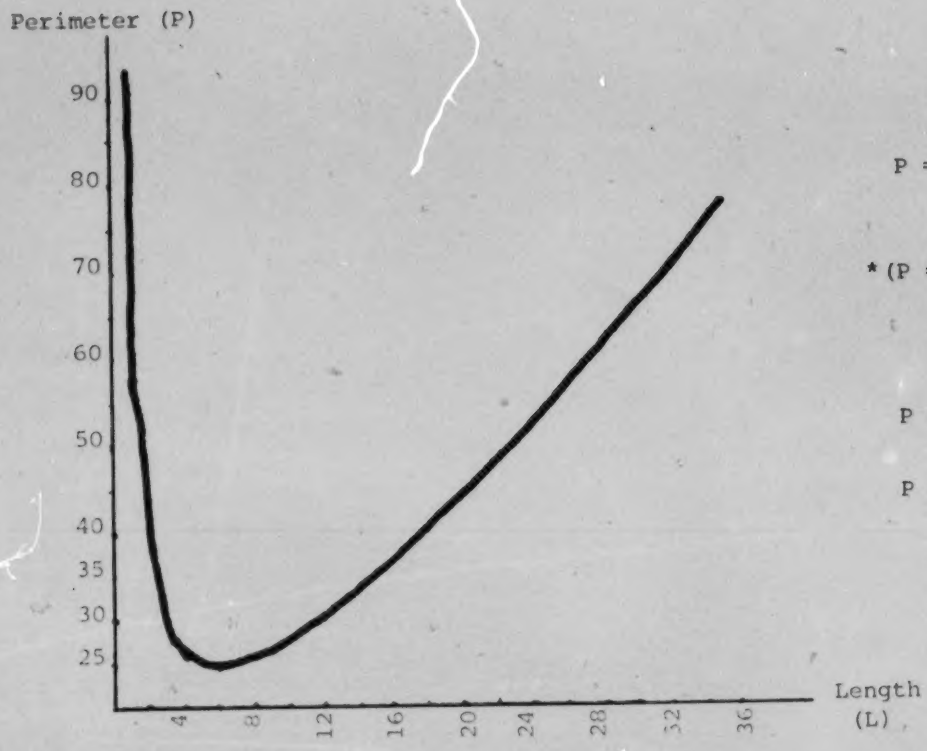
It may be desirable to construct graphs, such as those illustrated below, of the various relationships that exist between the length and width of a rectangle, between the length of one side of the rectangle and the perimeter, and the length of one side of the rectangle and the cost of fencing in the rectangular area. This will provide examples of graphs of second degree equations.



A = 36 sq. units

L x W = 36

L	W
1	36
2	18
3	12
4	9
6	6
.	.
.	.
.	.



$$P = \frac{72 + 2L^2}{L} \quad *$$

*($P = 2L + 2W$ but $L \times W = 36$

$\therefore W = \frac{36}{L}$

$P = 2L + 2(\frac{36}{L})$

$P = 2L + \frac{72}{L}$

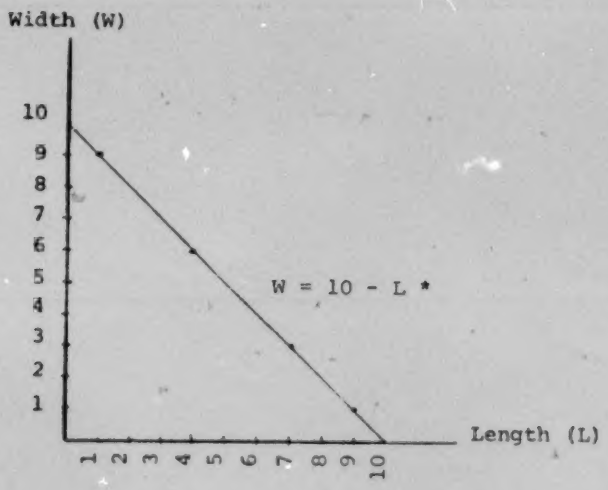
$= \frac{2L^2 + 72}{L}$)

Activity #23

Students now draw at least three different rectangles, but ones whose perimeter remains constant. For example:

- Students draw at least three different rectangles whose perimeter must always be 20 units. Some possible dimensions are 1 x 9, 4 x 6, and 5 x 5. Then raise the following questions:
  1. If the perimeter of a rectangular area remains constant, what is the largest area that can be enclosed by a fence?
  2. If the perimeter of a rectangular area remains constant, what is the smallest area that can be enclosed by a fence?
  3. Is the cost of the fence dependent upon the area enclosed?

Graphs of the relationships involved here, as illustrated below, can also be developed to provide examples of graphs of linear and second degree equations.

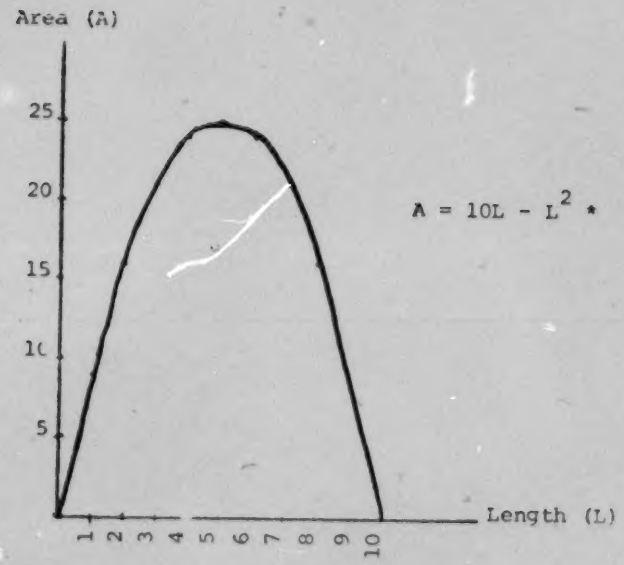


* if Perimeter = 20 units

$2W + 2L = 20$

$W + L = 20$

$W = 10 - L$



* $W = 10 - L$

$A = W \times L$

$= (10 - L)L$

$A = 10L - L^2$

Following these mathematical computations, conduct a follow-up discussion in which you ask

1. How many and what kinds of mathematical skills and formulas are involved in building a fence?
2. Does it seem as if building fences as a living would be an interesting occupation?
3. What are the advantages, personal satisfactions, and handicaps of a job which involves outdoor work and/or physical labor? Might people be attracted to or discouraged from this kind of job because it provides outdoor work and/or physical labor?
4. What kinds of physical skills are needed to be a fence builder? How can one learn them?

Useful Prior and Subsequent Activities:

- Students can volunteer to help build a real fence or build one experimentally on a vacant lot or field
- Students can make a map, model, or diagram of staking out fences in at least one of these four areas:
  - Heavy brush
  - Open fields
  - Hill country
  - Along the contour of the land
- Students can make maps and diagrams to scale. For each fence students specify:
  - Type of fence
  - Height
  - Total length
  - Cost of building this barrier

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Household Management Professional

MATHEMATICS RELEVANCE:

- Arithmetic
- Geometry
- Word Problems
- Conversion (metric)
- Measurement
- Areas
- Interest
- Percent

Activity #24

Subject Area:

Mathematics

MATH IN THE HOME

Capsule Activity Description:

Students research different household management projects and apply mathematical concepts in a practical setting.

Teaching Prerequisites:

materials needed: none
contacts with community: none
approximate preparation time: 2-4 hours
approximate class time: 1-1½ classes

Mathematics Objective(s):

to reinforce the practical application of basic arithmetic and geometric skills that are relevant to household management.

ACTIVITY

This activity is designed to provide students with a wide range of projects that will demonstrate practical applications of many mathematic concepts, such as area, cost computation, interest, percents, and measurement. Information needed to conduct these projects is readily available from the local library, local businesses and, most important, from students' parents.

You can integrate the activity into your mathematics class at any time of the year, but most relevantly when practical examples of the application of mathematics for the consumer are needed.

Each student engages in three different household management projects. The projects involve researching specific areas of homemaking. Students, as a result of their projects, are prepared to explain the processes involved, step by step, and to write at least three math word problems that are linked to these processes. Two examples of these outcomes follow.

Activity #24

Example 1. **Painting**

1. Describe the process of determining how much paint to purchase to paint one room.
   - Determine the total surface area to be painted by:
     - calculating the total surface area of the four rectangular walls;
     - calculating the area of the doors and windows in the room;
     - subtracting the smaller area from the larger area.
   - Read the spreading rate of the paint found on the label of the paint can.
   - Divide the total surface area to be painted by the spreading rate to determine the number of cans of paint to purchase.
2. Three sample word problems follow:
   - How many gallons of paint should be purchased if the area to be painted is 850 square feet and the spreading rate of the paint is 400 square feet per gallon?
   - What would the total cost of the job be if the paint costs $2.50 per quart.

Example 2. **Garment Making**

1. Run through explanation of making a garment from a pattern. Show:
   - How to pin and cut a pattern;
   - How to stitch and press seams;
   - Tailoring and fitting;
   - Measuring;
   - French patterns–converting metric to English system.
2. Three sample word problems can involve indicating:
   - How to take in a 27-inch waist band to fit a 24½ inch waist;
     - number of darts involved
     - size of each dart
   - How to measure an even hem line;
     - from waist
     - from floor
     - from hem fold
   - How to convert a three centimeter measurement into inches.

Research methods can include:

1. Interviewing parents and neighbors
2. Questioning garden clubs, 4-H clubs, home-management instructors, shop instructors, mechanics, plumbers, electricians, carpenters, etc.
3. Reading "how to" manuals provided by:
   - Government
   - Library
   - Local clubs and organizations
4. Asking store owners where home supplies are sold, such as
   - Fabric store
   - Hardware store

- Tile and paint store
- Grocery store or kitchen supplies store
- Lumber store

5. Reading bank brochures
6. Reading books on:
   - Math
   - Cooking
   - Home Economics

Students can select from among areas to investigate:

1. Cooking–a main course or vegetable dish
   - Measuring
   - Metric conversion
   - Increasing and decreasing recipes
2. Baking
   - Timing–rising in cooking with yeast, cooking in oven
   - Temperature–how it varies for glass or teflon pans
3. Interior design
   - Geometry–shapes, angles
   - Color charts
4. Painting
   - Paint needed to cover an area
   - Cost of supplies
5. Electricity
   - Wiring, circuits, overloaded circuits
   - Volts, watts
   - Converting European voltage to American voltage
6. Carpentry–windows, furniture, shelves
   - Geometry–shapes, angles
   - Measuring
7. Grocery shopping–family
   - Unit pricing–is family size cheaper?
   - Prices per pound
   - Budget shopping
8. Grocery shopping–consumer awareness
   - Shopping costs recorded with pocket calculator
   - Brand names and unknown brands. Is quality guarantee worth the extra price?
   - Price increases
9. Savings bank
   - Types of interest
   - Special plans, gifts, benefits
10. Checking account
    - Services
    - Cost of accounts

Activity #24

11. Home costs
    - Mortgages
    - Resale value
    - Rent
    - Tax (property)
12. Budgets–hypothetical
    - Money earned per year (all salaries)
    - Money spent per year (include everything)
    - Income Tax
    - Mortgage payments
13. Paying bills
    - Phone
    - Electric
    - Charge accounts
    - Penalties for non payment of late payments
14. Scheduling
    - Efficiency expertise
    - Planning around bus, school, train or other schedules
15. Car costs
    - Gas mileage
    - Repairs (labor, new parts)
    - Depreciation
16. Laying out tiles
    - Choosing correct number to cover an area
    - Fitting–geometry, shapes and angles
17. Clothing design
    - Measuring
    - Metric conversion
18. Plumbing
    - Circumference of new pipes and other parts
    - Angles at which pipes are installed
19. Buying home repair and carpentry equipment
    - Lengths of nails, bolts, screws, screw drivers, hammers, drills, etc. (reasons for these lengths)
    - Circumference size of nails, bolts, etc. (reasons for these sizes)

Students can choose their own areas to research or you can assign topics. In either case, when suggesting or assigning projects, be careful to avoid sex stereotyping. For example, don't suggest that girls might be interested in doing projects such as cooking or clothing design, or that the boys might care to do a project on automobile costs or plumbing.

Following the research, you can raise for discussion one or more of the following issues:

- If students selected projects traditionally associated with their sex, why did this occur? Why, for example, do the boys not want to consider clothes design as a career, or girls plumbing?

- What kinds of discrimination may occur against women and men who train for and enter occupations traditionally associated with the other sex? How can these people cope with such discrimination?
- How do people decide which occupations to enter? How often do people consider (or reject) certain occupations, for example, primarily because one of their parents is employed in the field?
- Do any of the careers studied involve extensive use of mathematics? What kinds of mathematics? How much training in mathematics is necessary to obtain the necessary mathematics skills?
- Is the mathematics required in these occupations dull, rote work, or varied and interesting, or both?

Useful Prior and Subsequent Activities:

- Students can implement some of their own research or a friend's research at home.
- Students can interview people employed in the careers or invite them to talk to the class.

Resources: Students can explore past issues of the following magazines for additional ideas:

- **Better Homes and Gardens** Magazine
- **Handyman's** Magazine
- **Woman's Day** Magazine
- **Family Circle** Magazine
- **Consumer Reports**

Comments from Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Financial Analyst
- Stockbroker
- Certified Public Accountant
- Bank Teller
- Bank Manager

MATHEMATICS RELEVANCE:

- Multiplication, Subtraction, Division
- Percents
- Interest
- Graphing

Activity #25

Subject Area:

Mathematics

DOW, JONES, AND EINSTEIN

Capsule Activity Description:

Students study various aspects of the financial world and "invest" in the stock market with imaginary money.

Teaching Prerequisites:

materials needed: graph paper, rulers
contacts with community: writing financial institutions; visiting banks
approximate preparation time: 1-2 hours
approximate class time: 1-2 classes

Mathematics Objective:

to develop skills in using interest, percents, dollars, multiplication, subtraction, division, addition and graphing.

ACTIVITY

The purpose of this activity is to expose students to the many careers in the financial world and to develop awareness of the practical applications of mathematical procedures learned in the mathematics class, such as percents, interest and graphing.

You can integrate this activity into your math lesson plans at several points, such as after a discussion of percents, interest, or graphing or whenever class discussion focuses around any of the financial institutions mentioned in this activity, especially the stock market.

If it is not feasible for your students to visit or write to banks, you can invite interested bank employees to visit the class to discuss banking procedures and careers. In addition, since the activity has several parts, you can implement only parts of the activity or assign it as an independent student study project.

Activity #25

The activity has two parts which can be conducted concurrently. Part One involves research; Part Two simulates investing in the stock market.

Part One

Divide the class into small groups. Each group chooses one institution to research, write to, or visit. Possible financial institutions are:

- savings bank–savings only
- commercial bank–checking accounts only
- bank–loans and mortgages
- guaranteed return investments–bonds, life insurance
- stock market
- credit–ratings and cards

Students can arrange for interviews by talking with school officials responsible for the school's finances, such as the payroll officer or comptroller. This person will have contacts with a local financial institution which students can pursue. Students can also enlist the aid of their parents, some of whom may work in one of these institutions, know someone who works in one, or have a personal contact as a result of having had business dealings with the institution.

Instruct each group to obtain information through their research, interviews, and/or letter writing in the following five general areas:

1. What are the types of jobs that these institutions provide (e.g., bank guard, teller, Certified Public Accountant, broker, financial analyst, stock broker).
2. What kinds of services does each institution provide the public (e.g., checking account, savings account, loans).
3. What do people do at these jobs.
4. What skills are needed for these jobs.
5. What mathematical concepts are used in the various jobs, including all mathematics formulas used.

Each group then develops a list of questions it wants answered by "its" institution. Sample questions follow.

1. What is your official job title? What exactly are you responsible for doing?
2. How is mathematics involved in your job: what mathematics skills do you use?
3. Do you enjoy your work? What do you like about it and what don't you enjoy? Is the part of your job where you use mathematics interesting? Is it boring?
4. What attracted you to a career in finance? What attracts other people?
5. Are there any women or minorities in executive or supervisory positions in your institution? How many? If there are few, why is this the case?
6. Do you use different standards when considering a loan (mortgage, etc.) to a woman than for a man? Do you issue credit cards to married women in their own name? How long have you been doing so? If you haven't always done so, why didn't you originally and why did your policy change?

After the groups have conducted their interviews and received answers to their letters, each group gives

a brief presentation to the class describing the results of its research. Follow-up discussions can focus on one or more of the following issues:

1. Which jobs involve the heaviest use of mathematics? In what specific ways is mathematics necessary for the tasks involved?
2. What skills besides mathematical skills are needed in these occupations?
3. What specific formulas and other mathematical skills which we have studied are used in these jobs?
4. Which jobs seem interesting and offer an opportunity for creativity? Which seem to involve primarily rote work? What other satisfactions and frustrations do these jobs present?
5. Is there any discrimination against women or minorities in any of these institutions–for example, in lending money, giving credit, providing credit cards, or financing major purchases? Should there be any discrimination? For example, should banks give less emphasis to a young, married, childless woman's salary when deciding whether to finance a house mortgage under the assumption that she will have children shortly and lose her job and income?
6. Why are there so few female and minority supervisors, executives, and officers in most financial institutions? Can women handle "money" matters as well as men supposedly can?

Part Two

Concurrently with their research tasks, students are given $1,000 in imaginary money to "invest" in the New York or American Stock Exchange for a one month period. Students then:

1. Discuss with their parents, relatives, or faculty members which stocks might be the best to buy. Factors such as the profitability of a firm, future prospects and the general economic situation can be considered. Is this a good time to invest in General Motors? In a sugar company?
2. Choose two companies as their first and second choice. No two students should be allowed to invest in the same company. You monitor the selections.
3. Find out basic information (type of products manufactured, mined, etc.) by calling a stock broker. For example, if a student chooses to invest in Roblin Industries or Dur Tst, he or she must find out what these companies deal in, what Dur Tst stands for.
4. Determine the last price of one share of stock from the financial section of a newspaper, such as 6¼ ($6.25) or 14-1/8 ($14.125).
5. Calculate the number of shares of this stock $1,000 will buy, keeping track of any change left over. For example, if a student invests in Continental Can Company stock which was last selling for $26.50 a share, he or she makes the following calculations to determine how many shares the $1,000 will purchase:

```
        37.
265.) 10000.
       795
       2050
       1855
        195
```

37 shares may be purchased, leaving a remainder of $19.50. This $19.50 will be added to the money earned or lost when the shares are converted back to money at the end of the month.

The actual amount of money invested by this student is $980.50 ($1,000 – 19.50 = $980.50).

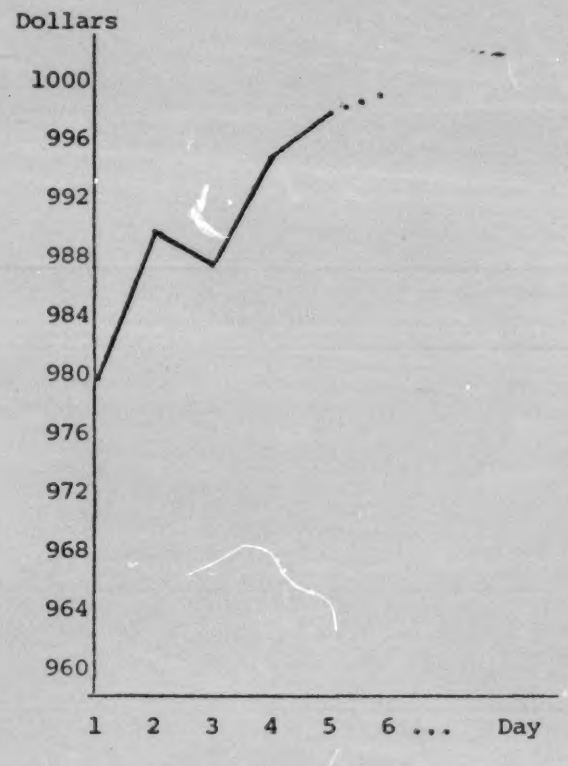
6. On a daily basis

Activity #25

- look up the cost of one share (printed in the financial page of newspapers) for an entire week;
- multiply the number of shares bought by the price of the share for the day;
- record this information on a chart and a graph as illustrated in the example below.

Day	Cost per Share	Value of Total # of Shares
1	26.50	$980.50
2	26.75	989.75
3	26.70	987.90
4	26.90	995.30
5	26.98	998.26
6	. . .	. . .

Continental Can Company
Number of shares: 37
Unspent money: $19.50



Post the graphs for inspection by the class.

7. At the end of one month, add any unspent money to the value of the shares and then determine profit or loss. Permit students to "sell" their stocks at the end of two weeks and purchase another stock. This might occur if a stock is constantly decreasing. Do not give the student another $1,000, but let him or her invest the amount obtained from selling his or her first stock.

After each student has completed the above seven steps, determine which students made and lost money, and how much. Discuss why people might have made or lost money. Was there any day on which most stock prices decreased or increased? What was happening in the world that day that might explain these changes?

Calculate how much money would have been made if the $1,000 was deposited in a savings bank for one month and compare this to the average profit or loss for the class. On the average, was it more profitable to invest in the stock market or a bank?

Follow-up discussion can also focus on what the job of a stockbroker is like—how a stockbroker might be able to invest money more wisely than the students did, and why some investors turn to stockbrokers rather than invest money themselves.

Useful Prior and Subsequent Activities

Students can hold onto their stocks and after several months graph the results of their holdings for another one month period to determine whether the same people profited or lost again.

Resources: Write to the Federal Reserve Bank in your region for banking information.

- Publication Services
  Division of Administrative Services
  Board of Governors of the Federal Reserve System
  Washington, D.C. 20551
- Federal Reserve Bank of Atlanta
  Federal Reserve Station
  Atlanta, Georgia 30303
- Federal Reserve Bank of Boston
  30 Pearl Street
  Boston, Massachusetts 02106
- Federal Reserve Bank of Chicago
  Box 834
  Chicago, Illinois 60690
- Federal Reserve Bank of Cleveland
  P.O. Box 6387
  Cleveland, Ohio 14101
- Federal Reserve Bank of Dallas
  Station K
  Dallas, Texas 75222
- Federal Reserve Bank of Kansas City
  Federal Reserve Station
  Kansas City, Missouri 64198
- Federal Reserve Bank of Minneapolis
  Minneapolis, Minnesota 55400
- Federal Reserve Bank of New York
  Federal Reserve P.O. Station
  New York, New York 10045
- Federal Reserve Bank of Philadelphia
  P.O. Box 66
  Philadelphia, Pennsylvania 19105
- Federal Reserve Bank of Richmond
  P.O. Box 27622
  Richmond, Virginia 23261
- Federal Reserve Bank of St. Louis
  P.O. Box 442
  St. Louis, Missouri 63166
- Federal Reserve Bank of San Francisco
  San Francisco, California 94120
- Merrill Lynch Pierce Fenner Smith
  165 Broadway
  New York, New York 10006
- National Association of Bank-women
  111 East Wacker Drive
  Chicago, Illinois 60601

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Purchaser

MATHEMATICS RELEVANCE:

- Graphing Linear Functions
- Graphing Systems of Equations

Activity #26

Subject Area:

Mathematics

BUYING CHARTS AND GRAPHS

Capsule Activity Description:

Students research and interview buyers in different industries, graph their findings, and present them to the class.

Teaching Prerequisites:

materials needed: graph paper, rulers
contacts with community: interview with buyers
approximate preparation time: 1-2 hours
approximate class time: 1½-2 classes

Mathematics Objective:

to reinforce knowledge of graphing linear functions.

ACTIVITY

This activity reveals to students one aspect of a career in marketing. It also reinforces their knowledge of graphing linear equations. Graphing equations with respect to an "x" and "y" axis is often an abstract concept for students. This activity provides a concrete application of graphs. It is applicable in any mathematics course which plans to include graphs of linear equations but presumes that the students have already been introduced to graphing ordered pairs.

Students collect examples of graphs relating sales or cost of products from newspapers and weekly magazines over some time interval. These graphs serve to aid students in constructing graphs from the data they will collect.

During one class period discuss the role of a "buyer".

For example,

Activity #26

- A buyer is a person who is responsible for purchasing goods for a business. Every wholesale and retail business and large agency (including school departments) has either official or unofficial buyers. For example, in a large department store there may be a buyer for each department; in a small retail store the owner usually purchases all of the goods to be sold.

You can also invite a purchasing agent to speak to the class on buying. Contacts can be made through:

- a student whose parent or relative is a buyer, owns a business, or is employed in a business or agency which has a designated or unofficial buyer;
- large department stores and companies.

If necessary, the school's purchasing agent can speak to the class.

Class breaks into small discussion groups. Tell the members of each group to choose a business that interests them as a group, such as clothing, farm machinery, or food, and then to formulate a set of questions for the interview.

During the following week and a half each group interviews at least one "buyer" in the business it has chosen. Sample questions students can ask follow:

1. What factors are considered by a buyer when he or she is purchasing goods?
2. How are graphs useful and important relating to buying and selling?
3. How does one become a buyer? What skills are needed–especially in the area of mathematics? Must buyers be "wheeler-dealers" and aggressive?
4. What mathematical principles does a buyer use?
5. What data does a buyer have that would be useful to the students for graphing linear equations? Such data would include the number of items bought and sold over some specific time period or the change in price of an item over time.

Students must be careful to obtain such data; without it, they will be unable to engage in the mathematics part of the activity.

Provide students with the following example of what kinds of data to collect before they conduct their interviews.

(Example:)

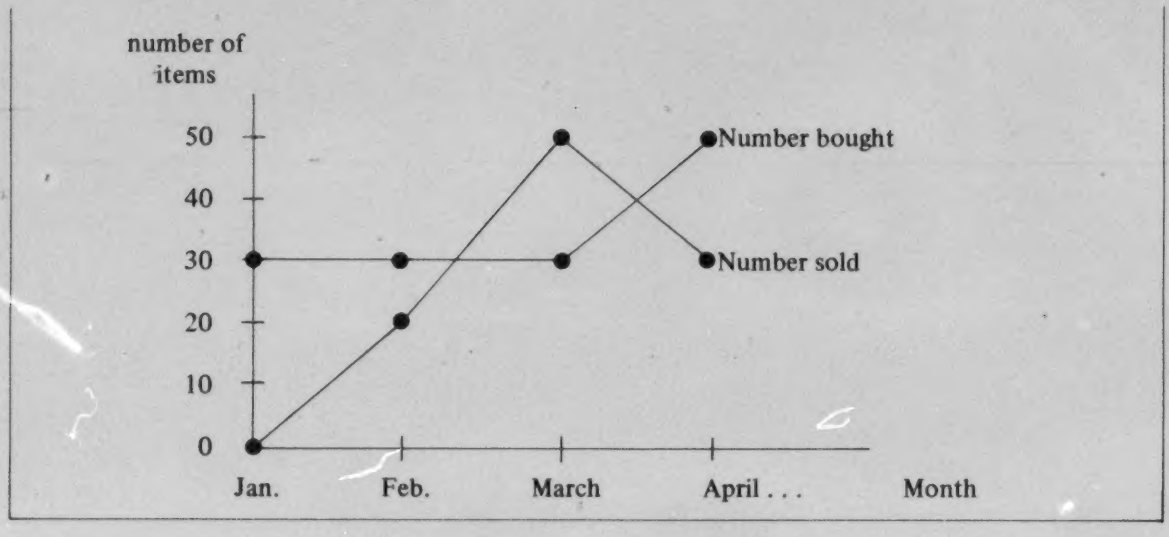
The following data was collected during an interview with a buyer in a department store regarding one item in the store.

Month	# Items Bought
Jan.	30
Feb.	30
March	30
April	50

Month	# Items Sold
Jan.	0
Feb.	20
March	50
April	30

Ordered pairs can be developed from this data and graphed.

Items bought–(Jan., 30), (Feb., 30), (March, 30), (April, 50)
Items sold–(Jan., 0), (Feb., 20), (March, 50), (April, 30)



Students conduct interviews and in their small groups develop graphs relating to data collected. Act as a consultant to the different groups during the one-and-one-half week period on a regular basis, giving special attention to the type of data collected. Groups then report their findings to the class and discuss the following types of questions with regard to their graphs.

1. What is the advantage of putting data in graphic form?
2. What predictions can a buyer make for next year's purchases based on the graphs?
3. Assuming the graphs of the number of items sold cannot be changed, how would a buyer like to change the shape of the graph of the number of items bought? Why?
4. Assuming the graph of the number of items bought cannot be changed, how would a buyer like to change the shape of the graph of the number of items sold? Why?

Presentations also include:

- a description of what a buyer does;
- discussions of skills a buyer needs and what kinds of personalities may be attracted to this occupation;
- list of advantages and disadvantages to being a buyer;
- discussion of why people become buyers;
- presentation of data found;
- actual and hypothetical graphs relating to the business person interviewed;
- how graphs are useful and important in relating buying and selling.

Useful Prior and Subsequent Activities

Students can do an independent study of the stock market, graphing the change in stock prices over time.

Activity #26

Resources: Filmstrips:

- "It's an Exciting Career," J.C. Penny Co., Inc., Educational and Consumer Relations, 1301 Avenue of the Americas, New York, New York 10010
- "Careers in the Department Store," State Department of Vocational and Technical Education, Curriculum Instructional Materials Center, 1515 West 6th Avenue, Stillwater, Oklahoma 74074

Comments from Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Health Careers
- Public Welfare Careers

MATHEMATICS RELEVANCE:

- Statistics
- Averaging
- Mean, median
- Percent

Activity #27

Subject Area:

Mathematics

FIGURING OUT OUR HEALTH

Capsule Activity Description:

Students visit health facilities to study how their statistics are recorded and then discuss how these statistics are obtained and used to improve community health.

Teaching Prerequisites:

materials needed: none
contacts with the community: visiting health, family, or public welfare clinics
approximate preparation time: ½-1 hour
approximate class time: 1½-3 classes

Mathematics Objectives:

to develop skills in working with percents, mean, median and average.

ACTIVITY

This activity provides students with realistic and practical examples of how statistical concepts learned in the classroom are used by health facilities in the community. At the same time it promotes student awareness of various occupations in fields related to Health, Family, and Public Welfare.

This activity is best integrated into a mathematics course when the concept of averaging or other related statistical concepts are presented.

Divide the class into small groups and ask each group to choose a health facility which deals with health, family or public welfare, such as:

- eye
- ear
- veterinary
- research clinic (heart, cancer, etc.)
- smoking
- lead poisoning
- birth control
- abortion
- venereal disease
- alcoholism
- visiting nurse association

Activity #27

Monitor the selection of health facilities to avoid duplication. Addresses for the clinics are available from your local city or town hall, hospitals, and the telephone directory. Contacts can probably be made through the school nurse, doctor, psychiatrist or psychologist, and guidance department. If interviews prove impossible, invite several health facility professionals, including statisticians, to class to discuss their careers and use of statistics.

In setting up their interviews, students request that if possible a clinic statistician be available for questioning.

Before conducting the interviews, each group develops a list of questions to ask about careers in the health field and about how statistics are used by health facilities. Sample questions follow.

Students contact the clinic to arrange an interview, stressing the need to conduct the interview when the statistician is available. Otherwise, have students do research on the clinic chosen. Students form the following questions after the research is made.

- How does this clinic help society?
- What diseases does it treat?
- Who is affected by these diseases?
- What types of information does the clinic collect?
- Why does the clinic collect this information?
- Why present this information in terms of statistics?
- How can statistics help in disease prevention and treatment?
- How do statistics help to trace the spread of contagious diseases? What are epidemic proportions?
- How can statistics be misuesd? Can you give an example?
- What tasks do statisticians perform? Are these enjoyable?
- What training do statisticians need and where do they get it?
- Why do people want to become statisticians?

After the interviews have been completed, there are a number of follow-up activities you can engage in.

1. Discuss the ways in which the health facilities collected their data and the uses to which they put their statistics.
2. Discuss whether any of the facilities appear to be misusing statistics. Ask the class how, in general, statistics can be misused. Why did someone once say, "There are liars, damned liars, and statisticians!"? Ask students to think of some statements involving statistics which are misleading. Ask them to identify examples from television advertising.
3. Discuss what the job of a statistician is like. What motivates people to want to become statisticians? What skills are needed? How are they learned?
4. Use information gathered by the students to reinforce your mathematics objectives. For example, if a chart is obtained from a health clinic or hospital showing the average height and/or weight of a person at various ages, then have the class calculate the average height and/or weight of the class, or, if desirable, the height and/or weight of a family member. Raise the following types of questions:
    1. How does the class average compare with data from the chart?
    2. How does each student's height and/or weight compare with data from the chart?
    3. If my height and/or weight, as indicated by the chart, is what it should be, does this necessarily mean that I'm physically fit?

4. If my height and/or weight, as indicated by the chart, is **not** what it should be, is there something wrong with me?
5. How was the chart developed?
6. How important is the average?

5. Have comparisons made between the use of statistics between different types of clinics. Are the uses the same? If not, why not? Also, encourage students to question the statistics presented by each other. This can be done by straightforward questioning or in a role play. For example:

   Student 1: "The average age of a person suffering from 'swimmer's ear' is 14."

   Student 2: "Oh yeah? How did you find that average? Besides, what meaning or usefulness does this statistic have?"

6. Students can role play situations in which a staff member from a health clinic presents statistical information at a press conference. Students assume roles of
   - staff members presenting statistics,
   - reporters who are questioning the statistics,
   - doctors and staff from the health clinic who support the statistics, and
   - concerned citizens attempting to understand the implications of the statistics.

Useful Prior and Subsequent Activities:

- Students can volunteer to work with statisticians as record keepers.
- Students can read the paperback book **How To Lie With Statistics,** by Darrell Huff, which identifies ways in which people in the community may be "lying" with statistics.

Resources:
- American Hospital Associates
  840 North Lake Shore Drive
  Chicago, Illinois 60611
- American Medical Women's Association
  1740 Broadway
  New York, New York 10019
- U.S. Public Health Service
  Office of Public Inquiries
  Bethesda, Maryland 20014

Comments from Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Poll Taker
- Statistician

MATHEMATICS RELEVANCE:

- Statistics
- Sampling
- Percents

Activity #28

Subject Area:

Mathematics

POLLING THE PUBLIC

Capsule Activity Description:

Students learn about the sampling process by developing and administering a poll.

Teaching Prerequisites:

materials needed: none
contacts with community: poll taking
approximate preparation time: 1-3 hours
approximate class time: 1½-2 classes

Mathematics Objective(s):

to learn the concept of sampling and random sampling;
to develop the students' skill in using percents;
to relate statistics to real life situations and issues.

ACTIVITY

This activity permits students to explore the role of the poll taker by developing, administering, and interpreting data from their own poll. Understanding how polls are conducted and how interpretations of polls are applied to the entire population will help students to analyze results from local or national polls, such as the Harris and Gallup polls.

This activity is best integrated into the mathematics class when the concept of sampling is being discussed, when students need practical applications of percents or useful applications on statistics.

During one class period, discuss the "sampling process." Stress the following points:

- A sample consists of a relatively small group of items which is chosen to represent a larger group called the "population." For example, all women with naturally red hair or all men with beards or all people with annual incomes above $100,000 are populations.

- Then, a "representative sample" must be chosen. This consists of a sample that is large enough to permit the statistician to make generalizations about the population. Ask students what a sufficiently large sample would be for men, high school girls, mathematics teachers, and one-eyed Labrador retrievers.

  For example, if a cigarette filter manufacturer says that 3 out of 4 doctors recommend their filters, and its sample consisted of exactly 4 doctors, would this sample accurately represent the population? Why?

- It is important that the sample be a random one. For a sample to be truly random, all individuals in the population must have an equal chance to be selected each time a selection is made.

  Examples:

  - If a legislator can't decide how to vote on a housing bill and he or she decides to take a sample opinion poll, would it be valid if he or she questions only white middle-class men? Why?
  - A magazine conducted a poll to predict the outcome of a presidential election. It selected samples by choosing names randomly from telephone directories. Why is this **not** a random sample of the population of voters? What **is** it a random sample of?

After this background discussion, the class breaks into small groups. Tell each group that it is its responsibility to conduct a poll during the following week and a half. Students should be encouraged to develop their own polls or questionnaires and then collect assorted data from a sample population. Some examples of poll topics follow.

- What is the average age of people who watch _____(students pick a television show)?
- How many people feel that busing is the solution to an equal education for all?
- Should the drinking age be raised to 21/lowered to 18 in this state?

Construction of Polls: Students choose a topic that interests them as a group, but should be cautioned to consider several factors including:

- Phrasing questions in the way most likely to get an honest response;
- Avoiding questions that require a written response;
- Avoiding too long a poll;
- Assuring respondents of anonymity and seeing to it that the poll in fact cannot reveal names;
- Investigating desirable and/or interesting relationships, such as sex, race, age, economic status, and and political preference;
- Deciding to whom to administer the poll and how it should be administered;
- Deciding how many people should be polled;
- Testing the poll on the rest of the class to remove the "bugs," such as confusing questions or too limiting a choice of possible responses to check or circle.

Administration of Polls: How honestly a poll is answered may depend on how it is administered.

- Student respondents may be more honest and serious if the poll is administered by other students, rather than by a teacher.
- Teacher respondents may be more honest if they are given the poll at a staff meeting or if a teacher distributes the poll rather than if students stuff teacher mailboxes with the poll.

- Students can take polls home to their parents and/or knock on doors.

Tabulation and Interpretation of Polls: Help students draw up a matrix to record their data. This should be done immediately before students have wasted much time doing unnecessary or useless tabulations. Sample matrices are:

	Men	Women	Democrats	Republicans	Independents
Favor retention of drinking age at 18					
Favor lowering drinking age below 18					
Favor raising drinking age to 21					
Favor raising drinking age above 21					

or

Question: How many people feel that busing is the solution to an equal education to all?

	Men	Women
Age 10-18		
Age 19-30		
Age 30-		

Have the students convert their data to percents after the data has been collected to permit interpretation of the results. For example:

Question: How many people feel that busing is the solution to an equal education to all?

	Men	Women	T*
Age 10-18	4	6	10
Age 19-30	16	9	25
Age 30-	12	13	25
Total	32	28	60

RAW DATA
(*T = Total)

	Men	Women	T*
Age 10-18	40%	60%	100%
Age 16-30	64%	36%	100%
Age 30-	68%	32%	100%

PERCENT BY AGE GROUP
(*T = Total)

	Men	Women
Age 10-18	12.5%	21.4%
Age 19-30	50%	32.1%
Age 30-	37.5%	46.5%
Total	100%	100%

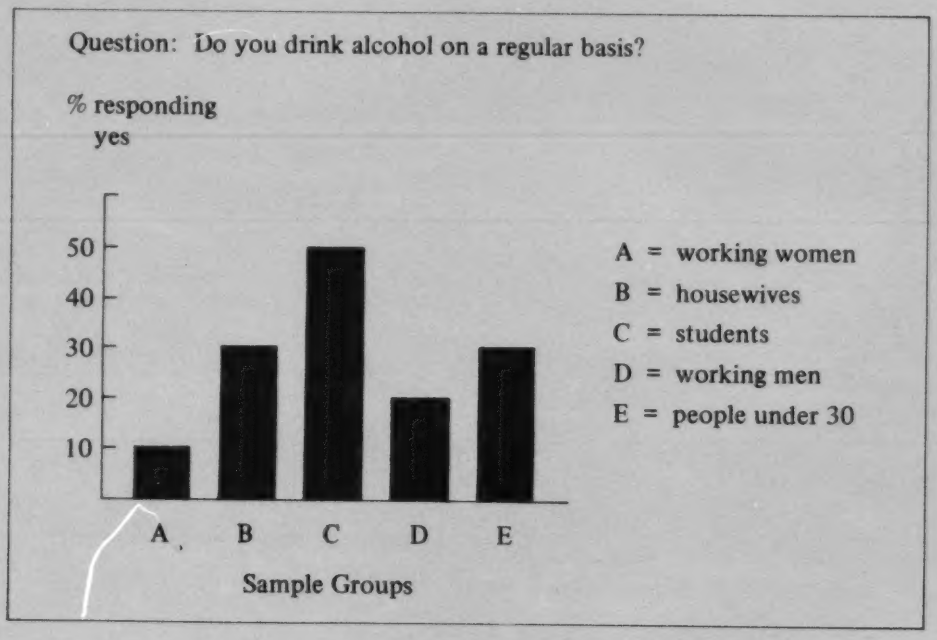
PERCENT BY SEX AND AGE GROUP

Men	53.3%
Women	46.7%
Total	100%

PERCENT BY SEX

Activity #28

Have students graph the results of their sampling. For example:



Students then discuss results obtained from the sampling, including such questions as:

- What estimates can be drawn from their sampling regarding the entire population?
- How is sampling a valuable process for business?

Students then post their data and graphs.

Finally, students discuss what they learned about poll taking and statistics as a career and address such issues as:

- Is poll taking and using statistics as an occupation, day in and day out, interesting work? What parts are interesting, if any, and what, if any, are not?
- What kinds of skills seem to be necessary to be a pollster or statistician?
- What non-mathematical aspects are there to being a pollster or mathematician?

Prior Useful and Subsequent Activities:

- students can read one of the books listed under "Resources";
- students can publish results of their poll in the local newspaper;
- a pollster or statistician can be invited to talk to the class.

Resources:

- **Sampling** (originally titled **Sampling in a Nutshell**),
  Morris Slonim,
  Simon and Schuster.
- **How to Lie with Statistics,**
  Darrell Huff,
  W.W. Norton and Company, paperback.

- American Statistical Association
  806 15th Street, N.W.
  Washington, D.C. 20014

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Architect
- Civil Engineer
- Land Surveyor

MATHEMATICS RELEVANCE:

- Trigonometry
- Geometry
- Measuring

Activity #29

Subject Area:

Mathematics

SURVEYING CAREERS

Capsule Activity Description:

Students interview and/or research careers of architects, civil engineers and land surveyors, and present findings to class.

Teaching Prerequisites:

materials needed: graph paper, ruler, pencils, scissors
contacts with community: interview with architects, civil engineers and surveyors
approximate preparation time: 1-3 hours
approximate class time: 1½-2 classes

Mathematics Objective(s):

to reinforce and enhance knowledge of geometry, of measuring, and drawing to scale;
to develop an awareness of geometric shapes in construction;
to learn the relationships of right triangles used in land measurement.

ACTIVITY

This activity introduces students to careers in architecture, Civil Engineering and Surveying. At the same time students become aware of many mathematcial concepts unknown to them and may motivate students to discover more about these concepts.

This activity is best integrated into a mathematics class after students have been introduced to the relationships of the right triangle. Students need not be totally familiar with the trigonometric relationship involved in the right triangle, however, for the activity to be used. Depending upon the ability level of your class, the relationships of the right triangle can simply be mentioned or more attention can be given to these relationships if students can understand their use.

Procedure: Class divides according to their interests into three groups, one each to research architects, civil engineers, and land surveyors.

Activity #29

This can best be done by having students write their name and their first and second occupation choices on a piece of paper, which is then collected. This prevents students from choosing an occupation because a friend has also chosen the same occupation. If any resulting group is too small, assign students to the smaller group based on their second occupational choice.

Assign each group responsibility for interviewing at least one person in its occupational area. Students within each group can do different tasks. For example, one subgroup can take responsibility for interviewing the architect; another subgroup can research the role of an architect at local libraries; still another group can collect or construct examples of instruments used by an architect.

Special assignments for each group can include:

1. Architects

- Students interview at least one architect. Students can ask these types of questions:
  - What types of mathematics are used by architects?
  - What training is needed to work in this field?
  - What tools or instruments do architects use to help them in their work?
  - How is the basic plan of a building or bridge developed?
  - How do geometric shapes affect building design?
  - Could we see some scale drawings?
  - What mathematics was used to make scale drawings?
  - How important is exact measuring in building and building design? in construction?
  - Why did you become an architect?
  - What training did you need?
  - Do you like being an architect?
  - Why are there so few women or minorities in architecture?

- Research the career of an architect in terms of why people become architects, what skills are needed, how and where they are learned, what the satisfactions and dissatisfactions are in being an architect, and who employs architects.
- Draw your school and/or one or more classrooms to scale and be able to explain how the process was developed.
- Provide examples of the types of mathematics used by architects.

2. Civil Engineers

- Students interview at least one civil engineer. Students can ask these types of questions:
  - What types of mathematics are used by civil engineers?
  - What training is needed to work in this field?
  - What are the occupations of some of the people who work with civil engineers?
  - What tools or instruments do civil engineers use in their work?
  - How are geometric sequences relevant to this profession? Give three example of how these are used.

- Research the career of a civil engineer. (See guidelines for architects above.)
- Give examples of two jobs performed by civil engineers. Describe the sequence of how these jobs are performed.
- Provide examples of the types of mathematics used by civil engineers.

3. Land Surveyors

- Students interview at least one surveyor. Students can ask these types of questions:
  - What types of mathematics are used by land surveyors?
  - What training is needed to work in this field?
  - What types of equipment is used by surveyors?
  - Who constitutes a surveying team and what is the role of each member of the team?
  - How do surveyors measure objects indirectly, such as the width of a river?
- Research the career of a surveyor. (See guidelines for architects above.)
- Provide examples of the types of mathematics used by surveyors.
- Construct working models of some of the tools and instruments used by surveyors.

Students can identify architects, engineers, and land surveyors to interview by consulting with parents, relatives, and school officials who may be or know such people and by looking in the Yellow Pages for companies which are likely to employ such persons and contacting these businesses' personnel or public relations departments.

Supervise the three groups closely to assure successful completion of this activity. Encourage students to seek your advice throughout the activity.

After conducting research, groups make a presentation to the class. Each presentation includes:

- a description of the occupation treated;
- what training and education is involved;
- what job satisfactions and frustrations the occupation entails;
- why people enter the occupation (and why women and minorities tend **not** to enter it);
- what types of mathematics are used;
- examples of the types of instruments used;
- any models or drawings developed. Architects' group can present a scale drawing and explain how it was developed. Surveyors' group can demonstrate how indirect measurement is used to determine heights of tall objects or distances across rivers.

Useful Prior and Subsequent Activities: Students can design and plan a building. "Architects" can draw to scale the basic shape of a building, incorporating at least three geometric shapes in the design, e.g., rectangles, triangles, and cylinders. "Civil engineers" can select the site of the building and discuss the engineering problems that may be encountered in constructing the building the architects have designed. "Surveyors" can describe the method for laying the foundation of the building.

Activity #29

Resources: For further information, students can contact local societies and associations listed in the phone book under "engineering," "engineers," "architects," and "architectural." Other sources follow.

- American Institute of Architects
  1735 New York Avenue, N.W.
  Washington, D.C. 20006

- Society of Women Engineers
  345 East 47th Street
  New York, New York 10017

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Computer Programmer
- Computer Technician

MATHEMATICS RELEVANCE:

- Logic
- Algorithms
- Computer Science
- Computer Programming
- Flow Charts
- Binary System

Activity #30

Subject Area:

Mathematics

COMPUTERS

Capsule Activity Description:

Students research questions and/or conduct projects concerning the development of computers and computer programming.

Teaching Prerequisites:

materials needed: none
contacts with the community: writing a major computer company or visiting people who program computers
approximate preparation time: 1-2 hours
approximate class time: 1½-2 hours

Mathematics Objectives:

to learn how a computer system operates;
to develop an understanding of computer language;
to learn the history of computer development;
to introduce students to computer logic;
to acquire an understanding of the binary system;
to develop skill in writing flow charts.

ACTIVITY

This activity introduces students to the world of computers and the occupations associated with them. All aspects of computer science can be explored through the activity, from program writing to card punching. Computers are often thought of having superhuman powers. By exploring all aspects of a computer system, it will become evident that computers can do nothing human beings could not do, if they had the time.

This activity can be introduced into your mathematics lesson plans of flow charts or computer programming before a discussion on the binary system or computer sciences or whenever you want your students to develop a better understanding of computers.

Students break into groups of five or less. Assign or allow each group to choose questions to research (you determine the number of questions) and/or projects to complete. Different groups can research **some** of the same **questions,** but no two groups should choose the same **project.**

Activity #30

Each group makes a presentation to the class upon completion of its research and/or project based on answers to the following questions:

- What are some early "computers?" (e.g., abacus, calculator, Napier's bones, adding machine.)
- How is a computer different from these predecessors?
- How are computers used?
- What are the different components of a computer?
- How is a computer programmed?
- How is a data card read by a person? a computer?
- What would it be like to work with computers as a profession?
- What types of companies, businesses, and individuals use computers?
- What computer-related jobs are available in these concerns? How do they differ?
- What are the parts of a computer and how do they work?
  - input
  - output
  - control
  - storage–memory
  - arithmetic–calculations
- How does one implement the basic steps of computer programming?
  - formulating, equations
  - analysis
  - programming
  - coding–data and instructions
  - running the problem through the computer
  - checking the problem
  - evaluating the answers
- What is a flow chart?
- How can a person learn to be a computer operator?
- How is research in developing more sophisticated computers conducted?
- How "human" can people make computers?
- What are some computer languages?
- What is the difference between an analog and a digital computer?
- How fast can a computer work?
- What is a nanosecond?
- Who are John Napier, Blaise Pascal, Charles Babbage, and Vannevar Bush? What is their relationship to computers?
- What is the binary system?

Each group can conduct one of the following projects:

1. **Research the development of computers and computer programming, including:**

   - a history of computers;
   - a description of the uses of computers built before and after 1930;
   - the history of social and technological advances resulting from the development of the computer;
   - a brief history of the people who developed early computers (John Napier, Blaise Pascal, Charles Babbage and Vannevar Bush); and
   - a brief description of science, engineering, and industrial application of computers.

2. **Develop Flow Charts.** Students design two flow charts describing an activity and a mathematic operation or equation.

   Examples: see following page.

3. **Binary Systems.** Students prepare and teach a lesson on the binary system, including:

   - how the binary system differs from the decimal system;
   - how computers make use of the binary system; and
   - examples of addition in the binary system.

4. **Field Trips.** Students visit two different types of computer installations and interview people who work with computers. Different types of agencies include:

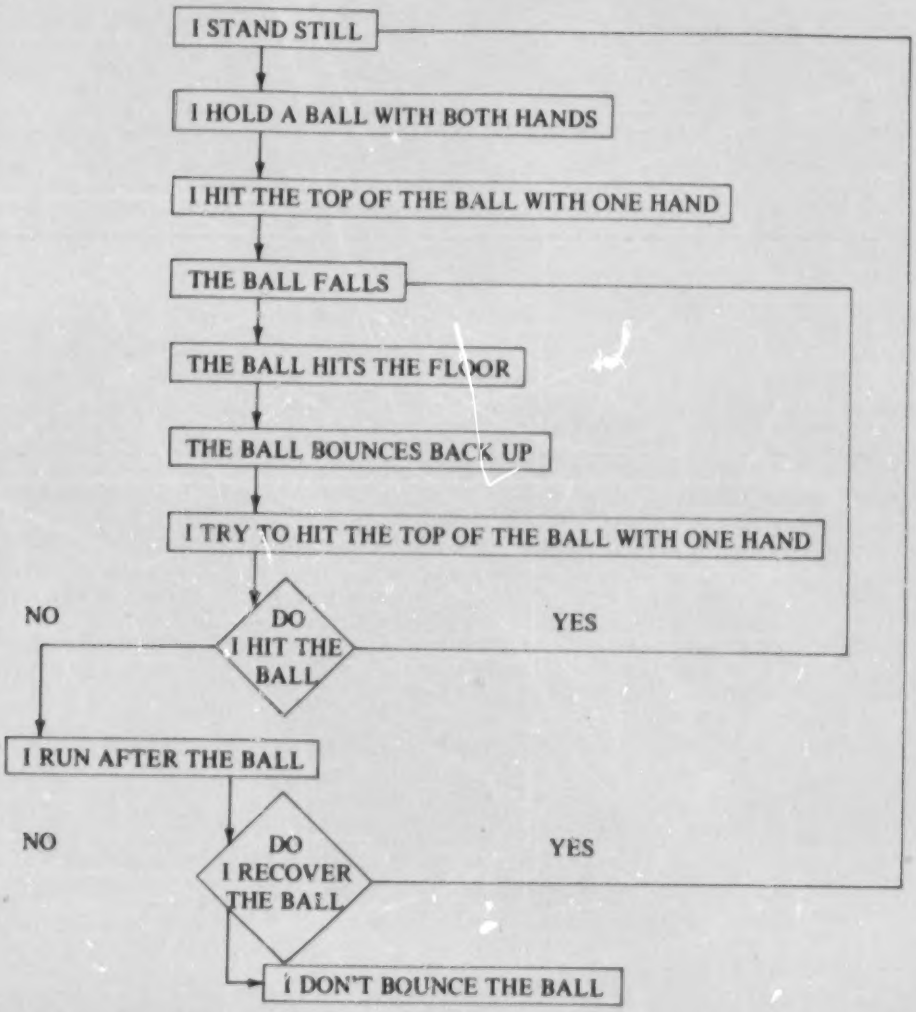
   - computer time renting agencies;
   - bill or payroll compiling agencies;
   - record keeping agencies (school, credit, college, law enforcement, life insurance, etc.);
   - scheduling agencies (trains, airports, schools, etc.).

Students can identify computer installations in their local city, town or school, or through computer companies, such as IBM, Honeywell, Digital, etc. Students can want to ask questions such as the following:

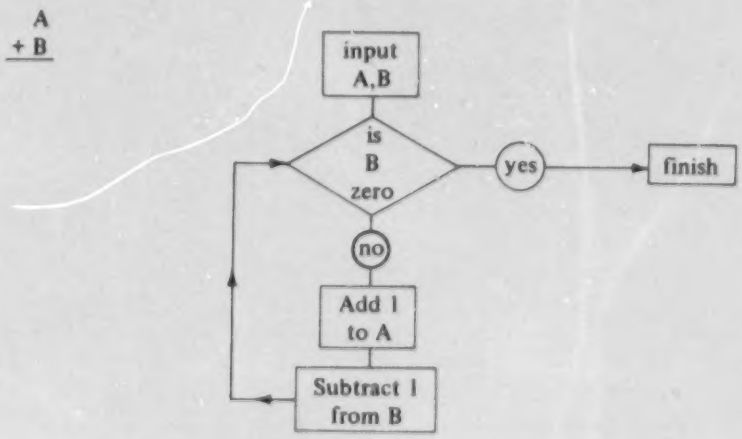
- How is the same computer program used to solve different problems? (i.e., figuring payroll probably uses the same program yet the names, number, and salaries of employees may vary.)
- What happens if a person makes a mistake in programming?
- How does one check for mistakes?
- Why have punched cards?
- What math background should a computer programmer have?
- What benefits and hazards are involved in working with computers?
- What hours do most computer programmers work?
- How expensive are computers to buy? to run?
- What advantages and disadvantages are there of punched-card machines?

Activity #30

Activity – Flow Chart for bouncing a ball


I STAND STILL
I HOLD A BALL WITH BOTH HANDS
I HIT THE TOP OF THE BALL WITH ONE HAND
THE BALL FALLS
THE BALL HITS THE FLOOR
THE BALL BOUNCES BACK UP
I TRY TO HIT THE TOP OF THE BALL WITH ONE HAND
DO I HIT THE BALL
NO
YES
I RUN AFTER THE BALL
DO I RECOVER THE BALL
NO
YES
I DON'T BOUNCE THE BALL

Mathematic operation – addition of two numbers flow chart:



5. **Computer Reasoning.** Students teach a 10-20 minute lesson on computer reasoning. Students develop and distribute a flow chart for a problem. Every step of the problem must be spelled out in detail in the flow chart, taking no step for granted. For other students to follow this process, the arithmetic should be performed as the flow chart (which is a description of the computer's reasoning process) is read until completion of the problem.

   Example: Problem: 115 ÷ 5. Process: Division in a computer is carried out by subtraction. The arithemtic consists of repeatedly subtracting the divisor 5, from the dividend 115. Every time a successful subtraction is made (i.e., when the remainder is not a negative number), the machine records it by adding a 1 to the quotient. Whenever a subtraction is unsuccessful (i.e., when the remainder is a negative number), that is the end of a sequence. Any record of the unsuccessful subtraction attempt is erased by adding 5 to the negative remainder and a new sequence begins. A new number is brought down from the dividend and the subtraction starts again. Any 1's resulting from this new sequence of subtraction are added to the quotient one place farther to the right. When all numbers in the dividend have been brought down and all successful subtractions tallied in the quotient, the problem is finished.

   The arithmetic problem is broken down into seven sequences. Letters beside the numbers (in computer reasoning process chart, following page) refer to boxes in flow chart.

Prior Useful and Subsequent Activities:

- Students can develop their own computer language and/or program to solve some relevant mathematical problem.
- Students can have an open class discussion of similarities and differences in computer programs.

Resources:

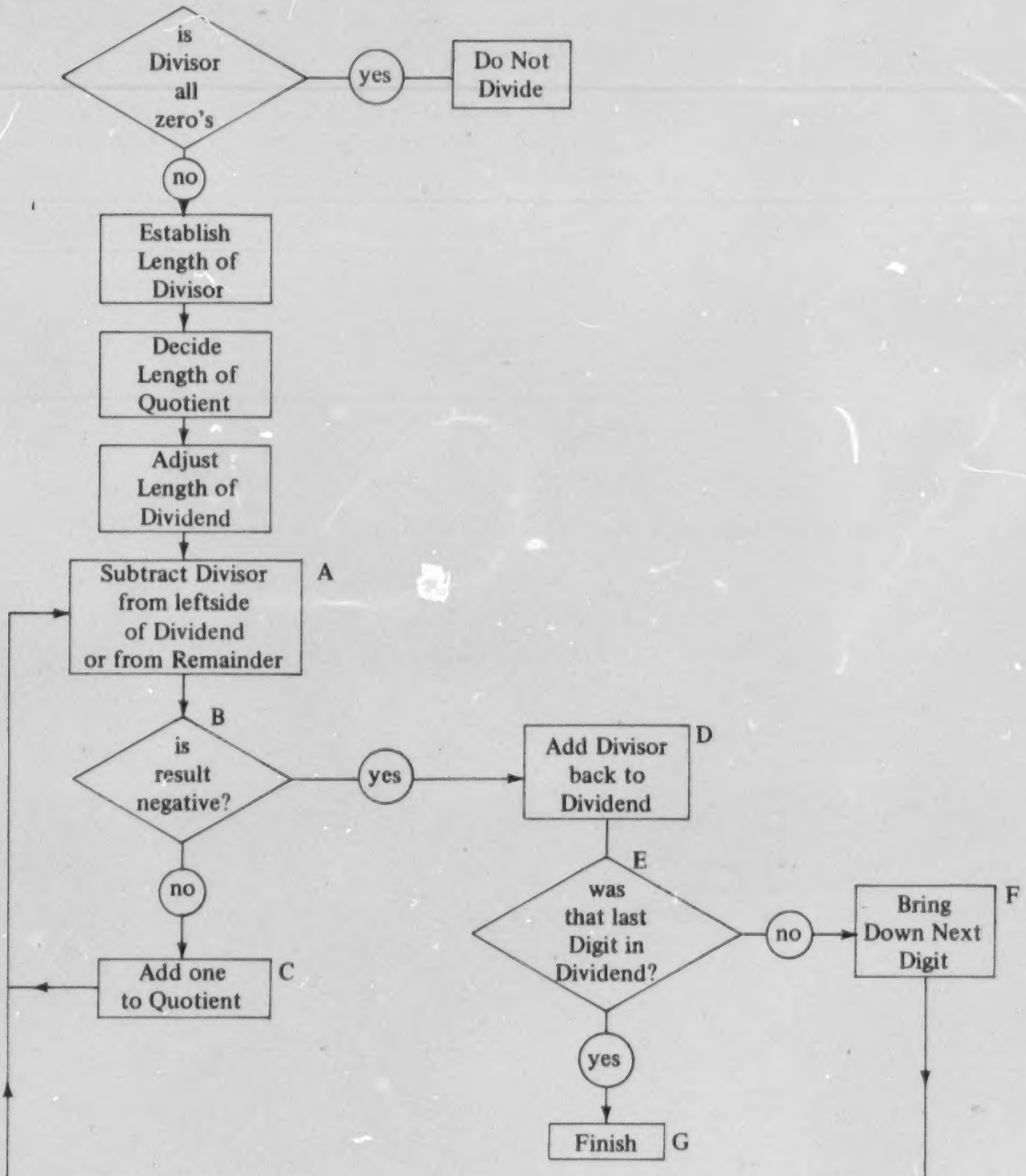
- **Mathematics at Work,**
  General Motors Corporation, Public Relations Staff,
  General Motors Building,
  Detroit, Michigan 48202.
- **Computers,**
  U.S. Atomic Energy Commission, Division of Technical Information,
  P.O. Box 62,
  Oak Ridge, Tennessee 37830.
- **You and the Computer,**
  Educational Relations Program, General Electric Co.,
  570 Lexington Ave.,
  New York, N.Y. 10022.

Additional free information may be obtained from the following companies. Make your request specific. For example, indicate if you want to know more about:

- the organization, its overall products and services;
- Electronic Data Processing career opportunities with a particular organization;
- a specific computer you may have heard about; and/or
- general educational materials.

Activity #30

Computer Reasoning Process:



Computer Arithmetic:

First Sequence

```
      1
5 )115
(a) -5
(c)(b) 6
```

Second Sequence

```
      2
5 )115
   -5
    6
(a) -5
(c)(b) 1
```

Third Sequence

```
      2
5 )115
   -5
    6
   -5
    1
(a) -5
(b) -4
(d) +5
   15
```

Fourth Sequence

```
      21
5 )115
   -5
    6
   -5
    1
   -5
   -4
   +5
  +15
(a) -5
(c)(b) 10
```

Fifth Sequence

```
      22
5 )115
   -5
    6
   -5
    1
   -5
   -4
   +5
  +15
   -5
   10
(a) -5
(c)(b) 5
```

Sixth Sequence

```
      23
5 )115
   -5
    6
   -5
    1
   -5
   -4
   +5
  +15
   -5
   10
   -5
    5
(a) -5
(c)(b) 0
```

Seventh Sequence

```
      23
5 )115
   -5
    6
   -5
    1
   -5
   -4
   +5
  +15
   -5
   10
   -5
    5
   -5
    0
(a) -5
(b) -5
(d) +5
(e)(g) 0
```

The seven sequences presented here are for your assistance only. Students should not break a problem up into several sequences but proceed step by step with one problem. Only the last sequence should appear on the chalk board when the problem is completed.

Activity #30

Unless otherwise indicated, address request for printed material to: Public Relations Department, E.D.P. Division.

- News Bureau
  Burroughs Corporation
  Second Ave. at Burroughs
  Detroit, Michigan 48232
- Control Data Corporation
  8100 34th Ave., S.
  Minneapolis, Minn. 54440
- Educational Relations Programs
  General Electric Company
  570 Lexington Ave.
  New York, N.Y. 10022
- International Business Machines
  Corporate Headquarters
  Armonk, N.Y. 10504
- The Marketing Service Dept.
  The National Cash Register Company
  Main and K Streets
  Dayton, Ohio 45409
- Radio Corporation of America
  Electronic Data Processing
  Camden, N.J. 08101
- Honeywell Inc.
  Electronic Data Processing Division
  60 Walnut Street
  Wellesley Hills, Mass. 02181
- American Federation of Information Processing Societies
  210 Summit Avenue
  Montvale, New Jersey 07645
- UNIVAC Division of Sperry Rand Corporation
  Township Line & Jolly Rd.
  Bluebell, Pa. 19422

Comments from Teachers and Students after Using the Activity:

Section Four: SCIENCE

1. ACTIVITIES SUMMARY

This section of the manual contains the following ten activities, sequenced very generally from easiest to most difficult.

31.* **UNDERSTANDING BATTERIES:** Students research how a battery works, what it does, and how to service a battery by interviewing gas station mechanics.

32. **TOILETS AND FUSES:** Students interview plumbers and electricians and make designs and models of plumbing and electric systems. Students role play repair jobs and safety precautions.

33. **DIGGING FOR JOBS:** Students research geological professions involving the extraction of natural resources from the earth's crust by interviewing or writing letters to persons in industries or government institutions involved in extraction of natural resources.

34. **A TREEFUL OF JOBS:** Students investigate the properties and uses of different types of wood by interviewing appropriate professionals who work with wood or wood products for their livelihood and role playing people involved in the life and uses of a tree.

35. **PREVENTING POLLUTION AND ENCOURAGING ECOLOGY:** Students examine and discuss chemical, biological, legal and social aspects of environmental pollution in their community by interviewing appropriate professionals in the field and by researching the effects of pollution in literature. Students then illustrate pollution and ecological principles by performing an ecology experiment.

36. **JOB CHEMISTRY:** Students investigate professional applications of qualitative and quantitative chemical analysis by interviewing and then role playing appropriate professionals in the field.

37. **PICTURE-PERFECT JOBS:** Students research, explore and analyze the interrelationships of light, sound, electricity, chemistry and mechanics in audio-visual production by interviewing appropriate professionals in the field and constructing an experiment or display.

38. **WORKING TO PRODUCE FOOD, HEAT, AND LIGHT:** Students examine the development, distribution and marketing relationships involved in the production of food, petroleum and electrical energy and then demonstrate and discuss these relationships through displays, flowchart and/or role playing in class.

39. **UNDERSTANDING TRAVEL JOBS:** Students investigate the relationships of the science of navigation, mechanics and biology to the transportation fields of aeronautics, highway, rail and water by library research and interviewing appropriate professionals in the field.

40. **PRODUCING CHEMICALS, PLASTICS, AND SYNTHETICS:** Students investigate the production of industrial chemicals, plastics, steel, and synthetic fabrics by interviewing and then role playing appropriate professionals in the field.

2. INTRODUCTION

As a senior high science teacher, you should consider career education as an integral and appropriate component of your teaching which will **increase your students' ability and motivation to learn science content and skills.** Moreover, as a science teacher, you are in a good position to integrate career education activities into your courses because you teach a variety of topics under the general rubric of science, including biology, geology, chemistry, physics, and mechanics.

*The activities in this section of the manual begin with number 31 because the numbering continues sequentially after the last activity (number 30) of the previous section of mathematics activities.

How will integration of career education activities into your science courses help you achieve your subject area objectives? There are at least two answers to this question.

1. While engaging in the career education activities provided in this manual, your students will learn a great deal about science **topics** related to the career or occupation they are studying. For example, if students interview people whose careers relate to wood (forestry, carpentry, lumber, etc.), the students are also going to learn a great deal about earth elements and plant life (general science). In short, learning about careers in science automatically involves learning about science **subject matter.**
2. By including career education activities in your courses, you will increase your students' **motivation** to study and learn about science topics and develop related skills. By studying careers related to science in exciting action-oriented ways, students will be stimulated to delve further into the field related to the occupations they are investigating. For example, students who study electrical wiring as a career by interviewing electricians will probably want to learn more about the science of electricity. In this manner, career topics have the attractiveness of **"relevance"** for studying and learning science content matter and skills. Activities dealing with concrete, current occupations of personal concern to your students can add motivation to the disaffected as well as involved students who want to know what science has to do with the world of an adult: "Can studying the nature of the atom get me a job?" is the unspoken query of many students today.

How can integration of career education with science operate in practice? Let us look at a hypothetical Sample Week's Lesson Plans to see how you can integrate career education activities into your science courses.

3. SAMPLE WEEK'S LESSON PLANS

The sample week's lesson plans on the following pages could be included in a General Biology class. These lesson plans presume that students have a basic knowledge of ecological principles, such as succession, carbon-energy cycles, and recycling. One must also assume that topics of plant classification, microscope work with plant cells, and plant growth and development have been studied by the students before this activity is used.

This teacher has decided to integrate Activity #34 on lumbering into his or her lesson plans. The teacher applies the activity toward a career education objective dealing with forests and wood: forestry, conservation, lumber, paper industries and carpentry. The teacher has chosen to divide the class up into five groups and has each group research career opportunities in the following five areas: 1. Trees in their natural state; 2. Cutting and transporting trees; 3. Saw mill–making trees into lumber; 4. Carpentry–furniture and building; 5. Paper making. Since this research involves visiting regional parks and industry and interviewing appropriate park and company officials, the teacher made the group assignments **at the beginning of the botany unit,** four weeks in advance of this week's activities, to allow students enough time to conduct their small group field trips. Having completed this research, the students become involved in the following sample week's lesson plans, in sharing and discussing what they have learned and in gathering additional information both about the botanical aspects of forestry and wood and about careers related to forestry and wood products.

The activity makes students aware of a variety of jobs related to the paper industry and carpentry, which is a **career education objective.** It also involves a study of the nature of wood, its composition, and its uses and thereby also addresses a **science objective** at the same time.

SAMPLE WEEK'S LESSON PLANS

(An illustration of one way to integrate a career education activity into your course.)

HOMEWORK ASSIGNMENT	DESCRIPTION OF CLASS ACTIVITY
Students read chapter in textbook on trees or forest conservation. The Scientific American offprint, "The Ecology of Fire" could be recommended. Students plant a tree seedling in the local park, open field, or school grounds.	• Class discussion of the need for and work of forest rangers, firefighters and conservationists and how and why State and National forests are designated. • A forest ranger of fire-fighter acts as a guest speaker in a student panel on "Trees in Their Natural State."
Students read articles taken from American Forests and the Sierra Club Bulletin magazines and write an ecological values comparison of "clearcutting" versus "selective cutting" of trees.	• Class discussion of values of clearcutting, selective cutting, and reforestation. • Class discussion of type of personality required to live in modern lumber camps, compared to lumber camps of the past and with other occupations in a city. • Draw or make a model of a modern lumber camp.
Choose several large trees in the community and estimate their height and number of board feet of lumber contained in them.	• Visit a local lumber yard or have a person from a lumber yard demonstrate different types of wood used as lumber and the different possible lumber cuts. • Discuss what his or her training is, the role of a lumber middleman, and what equipment he or she normally uses. (Activity #34)
Students design a piece of furniture or whittle an object out of wood.	• Have a school shop teacher, local architect, or carpenter describe the problems involved in the use of wood for houses and furniture. • Discuss unions, apprentices and special training and equipment used by carpenters, etc. • Class discussion of what must be considered to design a wooden house.
Make some paper out of scrap paper pulp and plants or out of plants (grasses, weeds, iris, etc.) alone.	• Visit a paper mill or newpaper plant. Discuss the need for paper recycling considering the ever-increasing volume of paper used annually. • Class discussion of the variety of occupations involved in paper manufacturing and newspaper companies.

4. CROSS REFERENCE

The cross reference below identifies by number activities which treat particular occupational issues and jobs (listed across the top of the page) and activities which reinforce specific science topics and skills (listed down the left-hand margin of the page). By using the reference, you can locate activities by specific jobs or occupational issues which you may want to teach or by particular science topics and skills which you feel are relevant points in your curriculum at which to introduce a study of careers.

SCIENCE

CROSS REFERENCE

TOPIC OR SKILL / OCCUPATIONAL FOCUS	Agronomist	Airline Careers	Appliance Repairperson	Architect	Audiovisual Technician	Auto Mechanic	Carpenter	Chemist	City Manager	Conservationist	Ecologist	Electrician	Engineer	Farmer	Food Careers	Forest Ranger	Gas Station Manager	Geologist	Health Inspector	Lumberjack	Lab Technologist	Marine Biologist	Meteorologist	Mineralogist	Pharmacist	Photography Careers	Plumber	Pollution Inspector	Public Health Inspector	Sailor	Television Careers	Tree Surgeon/ Farmer	Truck/Bus Driver	X-Ray Technician
Astronomy		39																									39	39			39			
Biochemistry							36					36						36		36				36			36							
Biology		39					36	35		35	38	35 36	38		34	38		36		36	35	35		36			36	39	39			39			
Botany															34																			
Chemistry					37	31	36 40	35		35	38	32 36 40	38		35	38		36		36	35	35		36	37		36			37					
Conservation															34																			
Conservation Ecology							36	35		35		35 36			35			36		36	35	35		36			36							
Earth Science	33	39						35		33 35	38	35	38		35	38	33				35	35	33					39	39			39			
Ecology															34																			
Electricity			32		37	31					38 32		38			38									37	32				37					
Environmental Science											38		38			38																			
General Science	33	39	32			31	36 40			33	32	36 40			34		33	36		36			13	36		32	36	39	39			39			
Geology	33									33							33						33											
Health		39																										39	39			39			
Light					37																				37					37					
Mineralogy	33									33							33						33											
Mechanics		39			37																				37			39	39	37		39			
Oceanography		39																										39	39			39			
Photography					37																				37					37					
Physics			32		37	31	40				32 38	40	38			38									37	32				37					
Sound					37																				37					37					

OCCUPATIONAL FOCUS:

- Auto Mechanic

SCIENCE RELEVANCE:

- General Science
- Physics
- Chemistry
- Electricity

Activity #31

Subject Area:

Science

UNDERSTANDING BATTERIES

Capsule Activity Description:

Students research how a battery works, what it does, and how to service a battery by interviewing gas station mechanics.

Teaching Prerequisites:

materials needed: a discarded automobile battery, which can be taken apart (optional)*
contacts with community: field trip to a gas station; interview with gas station mechanics after school
approximate preparation time: 2-4 hours
approximate class time: 1-2 classes

Science Area Objective:

To learn the electrical and chemical properties and applications of the electrolyte in a wet cell battery; to learn how electrical charges are stored or discharged in batteries; to learn how to clean, check and maintain wet cell batteries; to learn reasons for proper safety precautions when working with charged wet cell batteries.

ACTIVITY

Students research the types of engines, machines and appliances that use dry cell and wet cell batteries in terms of how a battery works, what it does, and how it is maintained. Each group develops its own questions about batteries and careers related to battery manufacture, operation and maintenance that it wants answered by a mechanic.

Some possible questions about batteries are:

1. What are the main functions of a battery?
2. How does a battery work with an engine? What must be done to start engines that lack batteries?

*Care should be taken if students themselves work with a battery, since it may have acid and other chemicals which can corrode skin and clothing.

3. What are negative and positive plates?
4. What is electrolyte in a wet cell? in a dry cell?
5. What is a cell? terminal?
6. What is the basic chemical action involved in a battery?
7. What is a charged condition? A discharged condition?
8. How does one clean a battery?
9. How does a person check battery charge?
10. What equipment is used in battery maintenance?
11. What are the advantages of wet cell over a dry cell battery in an automobile?
12. How does battery maintenance affect the general performance of a car?

Some career related questions for the mechanic that groups can pose are:

1. Where did the mechanic learn about battery maintenance? On the job? In school? etc.
2. What qualifications for licenses does a person need to do this job?
3. What are safety precautions that this person takes?
4. Why did he or she choose this occupation?
5. What are the satisfactions the job provides and its disadvantages?

Students can obtain answers to their research questions in one of three ways:

1. Individually or in small groups students can visit local gas stations to interview mechanics.
2. A whole class can take a field trip to a gas station near the school.
3. Have a gas station mechanic come to the classroom to explain wet cell battery servicing and maintenance.

For either of these options, you or your students will need to contact a gas station mechanic willing and able to explain how a battery works to inform him or her of your interest, make sure he or she has a wet cell battery available for demonstration purposes if you or your students cannot provide one, and indicate you want him or her to respond to technical questions, demonstrate chemical processes with a battery, and respond to career-related questions.

During the demonstration by the mechanic, students can ask to see the following processes, and have them explained:

1. cleaning a battery
2. maintaining the electrolyte level
3. checking the battery charge
   - with a hydrometer
   - with a voltometer
4. charging a battery with jumper cables.

After the field trip, interviews, and/or guest lectures, follow-up discussion can be held on the scientific principles behind the operation and maintenance of a battery and also on what skills people need to be mechanics, what mechanics do, and what the satisfactions and frustrations are to being a mechanic.

Useful Prior and Subsequent Activities: Offer to check the batteries of faculty members and/or student cars.

Resources: Students and teachers can write to the following for further information:

- Automotive Service Industry Association
  230 North Michigan Avenue
  Chicago, Illinois 60601

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Plumbers
- Electricians
- Appliance Repairpersons

SCIENCE RELEVANCE:

- General Science
- Electricity
- Hydrodynamics
- Physics

Activity #32

Subject Area:

Science

TOILETS AND FUSES

Capsule Activity Description:

Students interview plumbers and electricians, then make designs and models of plumbing and electric systems, and finally role play repair jobs and safety precautions.

Teaching Prerequisites:

materials needed: none
contacts with community: interview with plumbers and electricians
approximate teacher preparation time: 1-3 hours
approximate class time: 2-3 classes

Science Objectives:

to learn about the nature and uses of electricity and hydrodynamics; to learn about the hazards and safety precautions of an electrical system; to learn basic trouble-shooting in plumbing and electrical systems; to apply what they have leanred about electrical and plumbing systems to design a one-room house.

ACTIVITY

In this activity, the class splits into two groups. One group researches plumbing as a career and as it illustrates the use of scientific principles; the other group researches electricity.

The activity has three parts: students (1) interview plumbers and electricians; (2) observe electrical and plumbing systems; and (3) design their own wiring or plumbing system.

Part One: Interviews

Begin by soliciting student interest in one of these two fields. Divide the class into two groups based on the interests expressed. Provide the two groups with following instructions:

1. Identify a plumber or electrician, preferably several, whom you can interview. You can arrange

for the interviews through your parents, if they have had occasion to use a plumber or electrician; by using the telephone book, including the Yellow Pages; and by asking the school plumber or electrician to talk with you and to identify other plumbers and electricians who will be interested in talking with you.

2. Develop a set of questions you want to ask the people you interview. Be sure to ask them both about the scientific principles involved in plumbing and electrical work and what the jobs of plumber and electrician are like. Some examples of questions you can ask follow.

   a. Why did you decide to become a plumber (electrician)?
   b. What skills do you need and where did you learn them?
   c. Do you have to be a union member to work in this field? How do you become one? What does the union do for you? Does it discriminate against women or minorities?
   d. Do you enjoy working with your hands? Are there any special dangers in your work? Are you likely to be called at any hour of the day or night? Are you paid double-time when this happens?
   e. How much do you have to know about scientific principles to be a successful plumber (electrician)? What are the major principles that make a plumbing (electrical) system work?
   f. What kind of tools do you use? What are they used for?
   g. What safety precautions must you practice?
   h. When you are called in to solve a problem, how do you go about "diagnosing" what is wrong? Is this part of the fun in your job—figuring out what the problem is and what the solution must be? Or is most of what you do pretty routine?
   i. What are a fuse, circuit breaker, time delay fuse? What do amps, watts, volts, groundings, and resistance mean?
   j. How do drains, toilets, and showers work? How do you find a leak? How do you decide what piping material to use? What are the advantages and disadvantages of copper? How do drains become clogged?

Part Two: Observations

After the groups have divided up responsibility for conducting the interviews and have held them, instruct them to observe the wiring or plumbing system in three separate locations: their home, in school, and in a public building. Each student develops a list, based on his or her observations, of safety defects and safety precautions identified and also records any unusual features. Warn students to make their observations with the next part of the activity in mind.

The two groups then re-form and present the results of their interviews and of the observations to the other group.

Part Three: Wiring and Plumbing Designs

The two large groups now break into smaller groups, and each group designs its own wiring or plumbing system for a one-room house or illustrates diagrammatically a common plumbing or electrical problem. Examples of designs and problems include:

- a toilet, illustrating the principles of hydrology
- the wiring to an electric water heater, from fuse box to heater
- the process and results of a fuse blowing

- a circuit breaker overloading
- the effects of pipes and drains clogging

When they have completed their work, each group presents its design to the rest of the class and responds to questions and comments. Each group also indicates what skills were needed to create the design or what skills would be needed to solve the problem illustrated.

Useful Prior and Subsequent Activities: Students can ask plumbers and electricians if they, the students, can spend an afternoon or evening on the job with them as observers.

Resources: Students and teachers can write to the following for further information:

- National Appliance and Radio-TV Dealers Association
  318 West Randolph Street
  Chicago, Illinois 60606
- International Brotherhood of Electrical Workers
  1200 15th Street N.W.
  Washington, D.C. 20005
- National Association of Plumbing-Heating-Cooling Contractors
  1016 10th Street N.W.
  Washington, D.C. 20036
- United Association of Journeymen and Apprentices of Plumbing and Pipefitting Industry of the United States and Canada
  901 Massachusetts Avenue N.W.
  Washington, D.C. 20001

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Geologist
- Mineralogist
- Mining Engineer
- Drill Operator/Helper
- Field Foreman
- Soils Specialist
- Agronomist
- Ecologist

SCIENCE RELEVANCE:

- General Science
- Earth Science
- Geology
- Mineralogy

Activity #33

Subject Area:

Science

DIGGING FOR JOBS

Capsule Activity Description:

Students research geological professions involving the extraction of natural resources from the earth's crust. Students interview or write letters to persons in industries or government institutions involved in extraction of natural resources (optional). Students present this information to the class in the form of a report in which they use role playing.

Teaching Prerequisites:

materials needded: none
contacts with community: interviews with or letters to professionals involved in mining resources
approximate preparation time: 2-3 hours
approximate class time: 1-2½ classes (approximately 4 weeks may be required to get responses from letters to various industries)

Science Area Objectives:

To learn the uses and values of different minerals and natural resources from the earth's crust; to learn the hazards, risks and economic benefits involved in the process of extracting these resources; to understand the limited nature of these resources and the increasing costs for mineral exploration as more resources are used.

ACTIVITY

Divide the class into 3 to 5 groups. Each group picks a natural resource which can be found in the United States and researches information about the resource it has chosen and occupations related to that resource. Sample research questions students can address include the following:

- How is it formed? (E.g., fossil fuel)
- With what other minerals can it be confused? (E.g., gold and iron pyrite)
- Where is this resource commonly found?
- What is it used for?
- How is it stored?

- How is this resource processed?
- How can the resource be located?
- How can the mined land be reclaimed?

Groups can visit and interview or write to a major firm which mines or drills the natural resource they will research. Students can inquire about:

- What techniques are used to locate the resource;
- How the resource is extracted (e.g., strip mining, shaft mining, drilling);
- How the land is reclaimed after the extraction of the resource;
- What the various jobs are involved in the extraction process (see box at top of previous page for examples);
- What the functions of these jobs are;
- Why people enter these occupations;
- If women are discouraged from entering these occupations and discriminated against if they do;
- How and where these people are trained;
- Whether the firm also processes the material it extracts;
- If so, how; if not, where and how the material is sent;
- What the federal regulations are concerning this type of mining and drilling; and
- Whether the company follows these rules?

Students can identify companies to visit and staff to interview by telephoning resources. Students can write to these sources for answers to their research questions in addition to or instead of in order to arrange for a field trip. A sample letter students can develop for this latter purpose follows.

A. Student
Kennedy High School, Room 36
200 School Streer
Hartford, Indiana 98754

Mobil Oil Corporation
150 East 42nd Street
New York, N.Y. 10017

Dear Recipient:

I am studying the extraction processes of different natural resources in my earth science class and would appreciate any information that you could give me on:

1. How Mobil Oil discovers the location of petroleum,
2. How the petroleum is extracted from different areas,
3. How the petroleum is refined and processed.
4. The different petroleum products produced by Mobil Oil,
5. Areas of special research emphasis at Mobil Oil,

6. How the land from which the resources are taken is reclaimed and environmental pollution is minimized,
7. What federal regulations apply to your mining and refining,
8. The different occupations involved in petroleum mining and refining.

I look forward to your response to the inquiry.

Sincerely,

_____

In class, students should give reports on the natural resources they researched explaining how it is located and mined. Presentations can be in the form of role plays showing what happens to the resources from discovery to ultimate use and land reclamation.

Follow-up discussion can concentrate on one or more of the following issues:

- Should resources be mined or drilled when such extraction methods destroy the environment? Should strip mining be allowed, for example, or off-shore drilling?
- How do people end up selecting these jobs and training for them?
- Is there discrimination against women or minorities in any of the occupations related to geology and mining? If so, why does it exist and how should a woman or minority person react to it?
- What are some of the health dangers associated with these occupations? How serious are they? Should they be considered in selecting these jobs as an occupation?
- What are some of the advantages to being employed in these occupations?
- How would you diagram the process of extraction for each of the resources you researched?
- What are the uses of each of these resources and can any of them be substituted for each other? Why are some preferable to others in terms of transportability, efficiency, pollution, and potential for multiple uses?

Useful Prior and Subsequent Activities:

- Students can demonstrate how pieces of mining equipment relate to the laws of physics and how geophysical principles are used in the location of resources.
- Class can focus on those natural resources which provide energy, including sunlight, and research the advantages and disadvantages of each resource.

Resources: Students and teachers can write to the following for further information:

- American Geological Institute
  2201 M Street, N.W.
  Washington, D.C. 20037
- Society of Exploratory Geophysicists
  P.O. Box 3098
  Tulsa, Oklahoma 74101
- American Geophysical Union
  2100 Pennsylvania Avenue, N.W.
  Washington, D.C. 20037

- Soil Conservation Service
  U.S. Department of Agriculture
  14th Street and Independence Avenue, S.W.
  Washington, D.C. 20250
- The Metallurgical Society of the American Institute of Mining, Metallurgical and Petroleum Engineers
  345 East 47th Street
  New York, N.Y. 10017
- National Science Foundation
  Division of Environmental Sciences
  1800 G. Street, N.W.
  New York, N.Y. 20550
- Exxon Corporation
  1251 Avenue of the Americas
  New York, N.Y. 10020
- Mobil Oil Corporation
  150 East 42nd Street
  New York, N.Y. 10003
- Shell Oil Company
  P.O. Box 2463
  Houston, Texas 77001

The following game can be helpful in this exercise: **The Planet Management Game** (Houghton Mifflin Company, Boston).

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Forest Ranger
- Conservationist
- Lumberjack
- Tree Surgeon/Farmer
- Plant Nursery Operator
- Carpenter
- Architect
- Newspaper Press Operator

SCIENCE RELEVANCE:

- General Science
- Biology
- Botany
- Ecology
- Conservation

Activity #34

Subject Area:

Science

A TREEFUL OF JOBS

Capsule Activity Description:

Students investigate the properties and uses of different types of wood by interviewing appropriate professionals who work with wood or wood products for their livelihood and role playing people involved in the life and uses of a tree.

Teaching Prerequisites:

materials needed: sections of different types of wood (optional) and paper products (optional)
contacts with community: interviews with forest rangers, lumberjacks, carpenters, architects, paper recyclers, newspaper press operators and other professionals who use wood or wood products
approximate preparation time: 3-4 hours
approximate class time: 1½-4 classes

Science Area Objectives:

To learn the structures and functions of plant tissues to plants; to learn how plant tissues are used by man; to understand the limitations of forests resources and the importance of conservation and reforestation; to learn how machines are used to transform wood into useful products.

ACTIVITY

Students break into six groups based on their particular interests in the following fields related to wood products. Each group conducts appropriate interviews and seeks answers to science and career education questions such as those provided below.

Group I: Trees in Their Natural State

Students visit national or state parks or a state forest. If a visit is not possible, students may write for the information. Students arrange to visit forest rangers, ecologists, conservationists, fire fighters, plant nursery operators, and so on.

Students ask questions about any aspect of forestry as an occupation and how it relates to the science areas of ecology, botany, biology, and conservation. Sample questions include:

1. Where and how they were trained (on job, off job)?
2. Where does the nature of their work require them to live?
3. How does the work affect their life styles?
4. What hazards are involved in the job?
5. What special skills or strengths are needed?
6. What kinds of special satisfactions or drawbacks are there to working outdoors, with nature, and with one's hands?
7. Are there times when compromises must be made between ecological and conservation considerations, on one hand, and financial, political, or business considerations on the other?
8. What is a state forest? Why do we have them?
9. What are the stages of growth that a forest goes through? Why is the beech tree usually found in a climax forest?
10. How do diseases threaten the forest?
11. How do animals in the woods threaten trees? (E.g., deer eating bark off trees in the winter.)
12. Fire fighting:
    - What equipment is used? How does it work?
    - What hours does one work?
    - What are salary and insurance benefits?
    - What are the dangers in forest firefighting?
13. How do severe forest fires affect the ecology in the immediate area and in distant areas? (E.g., how do forest fires cause flooding?)
14. How can people plant forests to change their environment?
15. Who employs ecologists? (E.g., government, consumer groups, private industry, universities, housing developers.)

Before leaving the park, students pick up or make a list of all job positions in this and other parks, including as many job specifications as possible, such as training, salary, retirement, and other benefits.

If no forests, rangers, or conservationists are available in your particular area, students can use libraries to research the information and/or write to government agencies (e.g., Forest Service of the U.S. Department of Agriculture or the National Park Service) or to private forest industries, such as St. Regis and Weyerhauser and use the information received in a class discussion following the above questions as a guideline. If appropriate facilities are not convenient for any of the other groups' activities described below, they too can use libraries and/or write to agencies and companies instead. (See Resources.)

Group II: Cutting and Transporting Trees

This group of students visits a lumber camp. If this is not feasible, students can write to a large lumbering company to see how the business is run. A large lumbering yard can also be substituted here in place of a lumber camp, if no camps are nearby. Questions students can ask include:

1. What is a lumber camp like?
    - Do people live in the camp or in nearby towns?
    - If they live in camp, what are living conditions like?

- What hours do the people work?
- What salary and benefits do the people work for?

2. Is there discrimination against women and/or minorities? Could women handle the physical work required? Are there non-physical supervisory positions for which they could qualify?
3. What jobs ("foreman," chain saw operator, ecologist, etc.) are available in the lumbering industry?
4. What equipment is used? How does it work? How safe is this equipment?
5. Does the lumbering industry plan for reforestation? If so, how? (E.g., seed trees, replanting, skimming the forest rather than cutting everything.) If not, why not?
6. How are trees selected for cutting—by size? number per acre? quality? age?
7. How is the lumber transported? River? Trucking? Helicopter? What jobs are involved in transporting the cut trees? What are the special problems of moving logs? (E.g., size, jams in river.)

Group III: Saw Mill—Making Trees into Lumber

This group of students visits a saw mill. A lumber yard may be substituted for a saw mill if no mills are available. Group III may be combined with Group II if your location has limited resources.

Students can ask the following types of questions.

1. What jobs are available? (E.g., foreman, saw operator.)
2. What training and background is necessary for these jobs?
3. How does the equipment work? What are the operating hazards?
4. Are different trees cut in different ways?
5. What varieties of trees are sawed here? Where do they come from?
6. How are all parts of the tree used? Sawdust? Are any parts wasted?
7. How is wood stored? Are there fire hazards or aging problems?
8. What are costs? Of lumber? Equipment? Logs?

Group IV: Carpentry-Furniture

This small group makes a list of as many different kinds of carpentry linked with furniture as they can, such as wood joint (no nail) carpenters, cabinet makers, furniture factory employees, sculptors, etc.

Students in this group split up and visit as many different kinds of carpenters as are accessible. They can identify and contact appropriate carpenters to interview through school purchasing agents, parents who have hired carpenters for home repairs, local hardware stores, unions, and the Yellow Pages. Local unions can be found in the telephone directory under "Carpenters Local Union."

Students can start their interview by asking questions such as the following:

1. Where did you learn to be a carpenter? Apprentice? Self-taught? Grade school? Special training program? Is it difficult to get jobs if you're not a union member? Is it difficult to become a union member? Does the union discriminate against women and/or minorities?
2. How do you get jobs? Shop employee? Union? Custom designing?
3. What kinds of wood do you work with? How does one work with different kinds of lumber? How do different types of wood differ?
4. What equipment do you use? How does it work? Do all carpenters use this equipment?

5. Where does a carpenter buy his wood? How does forest ecology affect him?
6. What do you like about your job? What don't you like?

Group V: Carpentry-Building

Students in this group visit an architect and a wood frame building site.

Students ask both the architect and the builders about their jobs, including such questions as:

1. Where were you trained?
2. How do you find jobs in your field? Is the work seasonal?
3. What are benefits and hazards in your occupation?
4. What are the advantages and disadvantages of using wood as a building material?
5. What are the advantages and disadvantages of using particular types of wood for different purposes?

Students can also ask the architect and the builders the following types of questions and compare how the perspective of each type of person on the same problem varies.

1. What considerations must one have in mind in designing a house?
2. How does one choose the kind of wood with which to build?
3. How should one take the environment into account when building in a given area? (E.g., preserving existing trees, contour of the land.)
4. How does forest ecology affect home building?

Group VI: Paper Making

Students in this group visit a paper mill. Students make a list of all jobs related to paper making and describe the function of each of these jobs. Students observe the step-by-step process of paper making. Whenever possible, students ask how the equipment works and what training is necessary to operate it. Newspaper printing plants can be substituted for paper mills is no paper is manufactured in your area, or students can write to a paper mill.

Students may also want to learn:

1. How are different grades of paper made?
2. Where do the raw materials come from? (E.g., recycling, sawdust, logs.)
3. How does forest ecology affect the paper making industry?
4. Is this paper mill involved in any ecology projects?

Useful Prior and Subsequent Activities:

- Students role play people involved with the life and uses of a tree. (How many famous actors started by playing "a tree" in their school play?) Students start with the tree as a seedling and trace its growth, cutting, and milling. Then pupils examine its uses as furniture, homes, and paper. Involve all of the individuals of the groups in the role plays. Students can bring in as much relevant data on jobs as possible. For example: "I'm Jill Carver, ecologist. I planted this tree as a seedling in Michigan in 1935. I planted the tree as part of a reforestation project which I designed. It was the fourth such project I designed. . . .I'm Ranger Evans, I used a branch of this tree to wave to a rescue party when I was trapped in a snow drift. . . ."

- Students can refinish an old piece of wooden furniture to bring out the natural qualities of the wood.
- Students can make paper from different materials, such as grass, nasturtiums, iris or vines by:

  1. Macerating the material to be used in the paper into an even suspension of fiber (an equal amount of old paper can be macerated with the other materials to make a better quality paper);
  2. Spreading a thin layer of fiber suspension evenly on a wire mesh screen and allowing water to drain away;
  3. Turning the screen upside-down on a piece of wool felt and gently working screen away from paper;
  4. Covering paper with another piece of felt;
  5. Continuing to stack paper and felt on top of each other;
  6. Applying heavy press or pressure on top of pile until the paper is dry.

- Students can real Paul Bunyan stories or Ken Kesey's novel about lumberjacks, **Sometimes a Great Notion.**
- Students can visit a house or museum that has examples of antique furniture.
- Students can design a piece of furniture of their own, developing a rationale for why they have selected a particular type or types of wood for their product (e.g., durability, inexpensiveness, etc.).
- Students can do volunteer work in a reforestation or other ecology project.
- Students can conduct activity with major focus on **why** people take certain jobs—what they think they will like about them. including concern not only about the type of work involved and the salary, but also concerns about having job security, following in a parent's or role model's footsteps; being "desperate" for a job and taking the first opening available, having evenings and weekends free, avoiding or desiring a job that requires responsiblity or initiative, or finding a job which offers the opportunity to exercise authority, leadership, or creativity.

Resources: Students and teachers can write to the following for further information:

- Forest Service
  U.S. Department of Agriculture
  Washington, D.C. 20250
- Society of American Foresters
  1010 16th Street, N.W.
  Washington, D.C. 20036
- American Forest Institute
  1835 K Street, N.W.
  Washington, D.C. 2006
- Society of Wood Science and Technology
  P.O. Box 5062
  Madison, Wisconsin 53705
- Forest Farmers Association
  4 Executive Park East N.E.
  Atlanta, Georgia 30329

- Forest Owners, Inc.
  P.O. Box 295
  Yazoo City, Mississippi 39194
- National Forest Products Association
  1619 Massachusetts Avenue, N.W.
  Washington, D.C. 20036
- United Brotherhood of Carpenters and Joiners of America
  101 Constitution Avenue, N.W.
  Washington, D.C. 20001
- National Park Service
  Department of the Interior
  Washington, D.C. 20240
- American Pulpwood Association
  605 Third Avenue
  New York, N.Y. 10016
- American Paper Institute
  260 Madison Avenue
  New York, N.Y. 10016
- St. Regis Paper Company
  150 East 42nd Street
  New York, N.Y. 10017

Students and teachers can read and use the following: **Sometimes a Great Notion,** by Ken Kesey, (Bantam Books, New York: 1964, paperback).

The following game can be helpful with this activity: **The Redwood Controversy** - (educational simulation game). (Houghton Mifflin, One Beacon Street, Boston, Mass.)

Comments from Teachers and Students after Using this Activity:

OCCUPATIONAL FOCUS:

- Forest Rangers
- Conservation Lawyers
- Government Ecologist
- State Highway Patrol Officer
- Marine Biologist/Limnologist
- Manager of Large Factory
- Sanitary Engineer
- Meteorologist
- City Manager

SCIENCE RELEVANCE:

- Biology
- Earth Science
- Chemistry
- Conservation Ecology

Activity #35

Subject Area:

Science

PREVENTING POLLUTION AND ENCOURAGING ECOLOGY

Capsule Activity Description:

Students examine and discuss chemical, biological, legal and social aspects of environmental pollution in their community by interviewing appropriate professionals in the field and by researching the effects of pollution in literature. Students then illustrate pollution and ecological principles by performing an ecology experiment.

Teaching Prerequisites:

materials: terrarium equipment (jars, soil, plants, etc.); feather, oil, Eduquip Gas Sampling Kit
contacts with community: interviews with people whose careers are related to environmental protection
approximate preparation time: 3-4 hours
approximate class time: 2-4 classes

Science Objectives:

To learn how certain chemical pollutants are produced, detected, and prevented; to learn various effects of different environmental pollutants on living organisms; to realize how a scientific understanding of the effects of environmental pollution is necessary in order to create better regulatory laws and reduction of the pollution.

ACTIVITY

In this activity, students research the effects of water and air pollution and become aware of occupations related to their control.

The class breaks into small groups. Each group is responsible for researching one area of pollution and the jobs associated with preventing or monitoring it and for then conducting and experiment related to the area it researched.

Groups begin by selecting an area of pollution they want to study. Examples of issues they can research follow.

1. What is mercury poisoning? How does it affect fish and people?
2. What do terms used in measuring air pollution really mean?

3. What are the acceptable levels of different pollutants in the air?
4. What biological harm (diseases) can air pollution cause?
5. What harm and diseases can polluted water cause?
6. What happens in an unbalanced aquatic environment?
7. What meteorological and chemical conditions are necessary to produce smog?
8. How do weather and geography affect air and water pollution?
9. What government air and water pollution controls are there for factories, individuals, cars, sanitation dumps, etc.?
10. How are waste products disposed of or recycled?

Having identified their area of research, and after you have verified that it is a feasible topic to study, each group identifies methods by which to research its topic. Possible sources of information include:

- newspapers
- periodicals
- scientific reports
- government research centers
- libraries
- local environmental agencies and public interest groups

The latter two resources may be the most fruitful in terms of both accessibility (willingness to grant interviews and tours) and informativeness. All the groups can attempt to utilize both. Specific agencies and individual students can visit and interview the staff include:

1. sewage disposal and waste treatment plants
2. environmental protection bureau or agency
3. consumer action groups
4. air pollution control center
5. pollution research facility in a automobile company
6. state park and state forest ecologists
7. pollution enforcement agencies
8. sanitary engineer
9. city manager
10. weather bureau
11. factory manager

If field trips and interviews are not feasible, you can invite several officials from the above agencies to class to respond to students' questions.

Each group, before visiting its site(s), develops a list of questions to ask. These questions revolve around the following issues:

1. What kinds of pollution do you deal with? What scientific information and skills do you need for dealing effectively with them?

2. What other information and skills do you need in your job? Where did you learn them?
3. If part of your job involves preventing, monitoring, and/or cleaning up after pollution, is this a frustrating task? What kinds of opposition do you meet and how do you respond? Does your job discourage you a lot? Do you feel gratification when you succeed?

After students have conducted their interviews and completed their other research, groups reform to share their results and prepare a report for the class explaining their findings. Class discussion follows the group reports and focuses on the issue areas suggested in the three interview questions above.

As a follow-up activity, each group conducts an ecology or pollution experiment related to their research. Examples of useful experiments follow.

1. Students observe the effects of car exhaust pollution on clothing.

   Materials needed:

   iron
   ironing board
   nylon stockings
   35 mm. photo slide holder
   slide projector

   Students iron 1-½ inch squares of single mesh nylon (from old nylon stocking, not from stretch panty-hose type) in the middle of a "Readymount" 35 mm. photo slide holder. Different slides of the same type should be placed in various locations where modes of transportation are common, such as: gasoline station garages, busy street corners, residential street corners, bus stations, airports, train depots, and a rural countryside. The slides should be labelled with the name of the school, student, location and date. After 10 days of "contamination," the slides are brought back into the classroom and projected onto a screen and "breaks" in the nylon can be counted and compared with an initial count. The slides can be taken back to their pollution sites and allowed to sit for another 10 days, if time allows. Results then may be presented in a table or graph.

   Students then discuss the relative deterioration of nylon in the different areas and the role of transportation in creating air pollution.

Variations:

- slides may be placed directly "underneath" different cars, buses, etc. for a more specific study of the different modes of transportation.
- Different thin, net materials may be tested.

2. Students observe particulate pollution from vehicles.

   Materials needed:

   Vaseline
   microscope slide
   transparent metric ruler

   Students coat a thin layer of Vaseline on one side of a microscope slide and hang or place the slide in various locations where different modes of transportation are common, such as: gasoline

stations, bus/subway stations, train depots, busy street corners, residential street corners, airport, rural countryside, or simply outside of the classroom window or on the roof. After 10 days, the slides are examined under a microscope and the relative numbers of particles per square millimeter or per microscope field are counted and recorded. The number of square millimeters of a microscope field may be measured by placing a transparent metric rule under a microscope to measure the diameter of the field. The area of the field may then be computed by using the formula:

$$\text{Area} = \pi r^2$$

Students discuss the roles of automobiles, buses, etc. in releasing particulate matter into the air and possible health consequences and cleaning bills.

3. Students observe the effects of sunlight on gasoline.

Materials needed:

ozone/ultra-violet lamp

small clear box or cut-away shoe box and cellophane

saucer

tablespoon

gasoline

Place an ozone/ultra-violet lamp inside a small clear box or a cut-away show box with a cellophane or plastic top along with a saucer with one tablespoon of gasoline. Turn on the ozone lamp and observe the following petrochemical reaction:

$$O_2 \longrightarrow O_3$$

$$O_3 + \text{gasoline} \longrightarrow \text{aerosol smog.}$$

Students relate this reaction to the effect of the sun's ultra-violet rays on gasoline from motor vehciles.

Variations:

- The ozone lamp may be used to test the effects of ozone on rubber, such as pieces of automobile tire, over time.
- An induction coil producing a continuous spark may be used in place of the ozone lamp in experiments **NOT** involving flammable gasoline.

4. Students observe the effects of sulfur dioxide, emitted by car exhausts, on plant life.

Materials needed:

two identical plants

two large, wide-mouth jars

2 ml. of 5% sulfuric acid

2 grams sodium sulfite

Students put two identical plants, such as geraniums, inside of two large (at least one gallon), wide-mouth jars which can be sealed air-tight. Insert a small container with 2 ml. of 5% sulfuric

acid (H_2SO_4). Add 2 grams of sodium sulfite (Na_2SO_3) to the sulfuric acid and seal the top of the jar. This will serve as a control. Observe and record the appearance of the plants before the experiment and each day for the next few days.

Students then discuss the causes and effects of sulfur dioxide pollution, in particular the effect of automobile exhaust on plant life. Class discusses how things that affect plants might also affect animals and human beings.

Variations:

- A large plastic bag may be used in place of the jar if all holes are sealed with tape and the opening of the bag is taped shut.
- Small animals could be tested instead of plants. Animals such as sowbugs, grasshoppers, earthworms, snails, frogs and mice make good subjects.

5. Students test and observe the effects of gases commonly found in emissions from transportation vehicles on living and non-living materials.

   Materials needed:

   wide-mouth jars

   gases–sulfur dioxide, ozone, hydrocarbon, nitrogen dioxide

   See materials to be tested at end of experiment

   Students suspend or place objects inside of an air-tight test chamber in which gases such as sulfur dioxide (SO_2), ozone (O_3), hydorcarbon, nitrogen dioxide (NO_2), and carbon monoxide (CO) have been placed. The gases should **always** be introduced under a fume head to prevent harm to the students. These gases are available in cylinders from many chemical supply houses. The air-tight test chambers can be wide-mouth jars with good, reliable tops, glass aquaria, or bell jars. Gas concentrations may be controlled by using gas sampling detector tubes, such as Eduquip Gas Sampling Kit, available from various supply houses. Gas concentrations best tested in this study would be as follows:

   SO_2 = 0 ppm for 1 hour
   O_3 = 0.25 ppm for 30 minutes
   NO_2 = 0.25 ppm for 1 hour
   CO = 120 ppm for 1 hour
   Hydrocarbon = 90 ppm for 1 hour

   Materials to be tested in these test chambers:

   1. Metal Alloys - aluminum, copper, brass, silver, steel, zinc, etc.
   2. Rubber - tires, rubber bands
   3. Fabrics - cotton, wool, nylon, silk; dyed or undyed
   4. Paints, stains, varnishes
   5. Plants - onion, rose, lettuce, bean, clover, tomato, etc.
   6. Fungi - mushrooms, mold, yeast
   7. Animals - fruit flies, sow-bugs, earthworms, ants, etc.

Variations:

- Time and concentration of gases may be varied.
- Combinations of different gases may be tested.

6. Students determine the concentration of carbon monoxide in an area of high transportation vehicle density.

   Materials needed:

   detector tubes

   Students sample and determine the concentration of carbon monoxide emissions in various areas such as: bus/subway stations, train depots, gasoline stations, busy street corners, quiet residential areas, rural countryside, and airports. Carbon monoxide detector tubes (e.g., Eduquip Gas Sampling Kit) are available from chemical supply houses. Samples of air are taken into the gas detector tubes and the specific concentration of gas is identified by a color change in the tube.

   Students discuss and account for the variations observed in the different locations.

Variations:

- Sample emissions from automobiles with air pollution controls can be compared to those taken from cars without air pollution controls.
- Students can alter the idle speed of an automobile and test exhaust for carbon monoxide changes.

7. Students investigate the effects of gasoline or oil spills in freshwater plants and animals.

   Materials needed:

   10 gal. or larger aquarium
   fresh water fish
   plants
   gasoline
   motor oil

   Students set up a 10-gallon or larger aquarium with various common fresh water fish (guppies, goldfish, etc.) and plants (Elodea, sea grass, algae, etc.). Then a few drops of gasoline are placed on the water, representing a spill from a power boat. Observations are made of any changes in normal growth and behavior patterns.

   In another aquarium, or the same one at a later date, a few drops of motor oil are placed on the water. Observations and comparisons are made between various spills and their effects.

Variations:

- The "oil spill" could be made in a small lagoon or a lake and changes in plant and animal life could be noted by sampling at various intervals.
- Samples of plant and animal life could be taken from an area near a busy dock and compared with samples taken from another area where similar boat traffic occurs.

8. Students determine the oil absorption abilities of various materials.

   Materials needed:

   oil
   water
   one-square foot trays
   hay
   cloth
   newspaper
   paper towels
   sponge
   weighing scales

   Students pour oil on top of water in trays of at least one-square foot surface area until the surface is just covered. Equal amounts of oil should be poured into equal size trays of water for each separate material to be tested. Students then try to absorb all of the oil using such materials as: hay, pieces of cloth sheets, newspaper, paper towels, sponge, and whatever other materials that they can think of. As much material should be added to the tray as is needed to absorb all of the oil. The material is then set aside and weighed to find out how much material was needed to absorb the oil. The weights and relative absorption abilities can then be compared. Results can be discussed in terms of difficulty in removing oil slicks from beaches and shore line left by boats.

9. Students investigate the sound deadening characteristics of an automobile muffler.

   Materials needed:

   new automobile muffler
   old automobile muffler
   micorphone (optional)
   oscilloscope (optional)

   Students produce a loud sound of a known and repeatable quality and pass this sound through a new muffler and an old, discarded muffler. The "muffled" sound is then compared with the original sound in both cases. A microphone connected to an oscilloscope can be used to compare the initial and final sounds quantitatively in each case.

Variations:

- The needle for volume on a good hi-fi amplifier or tape recorder can be used to compare relative sounds.
- A decibel-meter can be used to find out the exact intensities of the sounds.
- New and worn-out mufflers can be opened up to investigate muffler sound baffles.

10. Students compare noises produced by automobiles, buses, subways and other transportation vehicles.

Activity #35

Material needed:

decibel meter

Students directly measure the noise produced by an automobile pulling away from a curb and compare this noise to a bus pulling away from a curb, and a subway pulling away from its stop. The noise can be quantitatively measured using a decibel meter.

Students should discuss the relative amounts of noise produced by each mode of transportation and determine the amount of noise produced per person being transported. For example, if a bus can carry the same number of people as 30 automobiles, cars create the most noise pollution per passenger transported.

Variations:

- Students may record the sounds on tape and analyze them later on equipment in the school, such as an oscilloscope.
- Students can volunteer to clean up a polluted river or stream near the school. They can also offer their services to local ecological societies and groups.

Resources: Students can write to the following for additional information:

- Forest Service
  U.S. Department of Agriculture
  Washington, D.C. 20250
- Society of American Foresters
  10-0 16th Street N.W.
  Washington, D.C. 20036
- National Park Service
  Department of Interior
  Washington, D.C. 20001
- American Meteorological Society
  45 Beacon Street
  Boston, Massachusetts 02108
- American Bar Association
  115 East 60th Street
  Chicago, Illinois 60637
- Water Pollution Control Federation
  3900 Wisconsin Avenue
  Washington, D.C. 20016
- Interstate Conference on Water Problems
  c/o Council of State Government
  1735 DeSales Street, N.W.
  Washington, D.C. 20036
- Air Pollution Control Office
  Office of the Commissioner
  Parklawn Building
  5600 Fishers Lane
  Rockville, Maryland 20852

- Citizens For Clean Air
  502 Madison Avenue
  New York, New York 10022
- Environmental Protection Agency
  Waterside Mall
  45h and M Streets, S.W.
  Washington, D.C. 20460
- National Oceanic and Atmospheric Administration
  Gramex Building
  8060 13th Street
  Silver Spring, Maryland 20910
- Sierra Club
  1050 Mills Tower
  San Francisco, California 94104
- Wilderness Society
  729 15th Street N.W.
  Washington, D.C. 20005
- Friends of the Earth
  451 Pacific Avenue
  San Francisco, California 94133
- National Audubon Society
  1130 Fifth Avenue
  New York, New York 10038
- Environmental Defense Fund
  1901 N Street, N.W.
  Washington, D.C. 20036
- Conservation Foundation
  1717 Massachusetts Avenue, N.W.
  Washington, D.C. 20036
- Center for the Study of Responsive Law
  Box 19367
  Washington, D.C. 20036
- National Wildlife Federation
  1412 16th Street, N.W.
  Washington, D.C. 20036

The following games can be used along with this activity:

- **Dirty Water.** Urban Systems, Inc., 1219 Massachusetts Avenue, Cambridge, Mass. 02138
- **Smog.** Urban System, Inc., 1218 Massachusetts Avenue, Cambridge, Massachusetts 02138
- **The Pollution Game.** Houghton Mifflin Co., One Beacon Street. Boston, Massachusetts 02107
- **The Planet Management Game.** Houghton Mifflin Co., One Beacon Street, Boston, Massachusetts 02107

Activity #35

- **Pollution: Negotiating a Clean Environment.** Instructional Development Corporation, Salem, Oregon 97304
- **Baldicer.** John Knox Press, Richmond, Virginia 23209

The Eduquip Gas Sampling Kit can be obtained from:

- Eduquip - Macalaster Corporation
  1085 Commonweaith Avenue
  Boston, Massachusetts 02215

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Industrial Chemist
- Medical Technologist
- Lab Technologist
- Health Inspector
- Pharmacist
- Pollution Inspector
- Sanitary Engineer

SCIENCE RELEVANCE:

- Chemistry
- Biochemistry
- General Science
- Biology
- Conservation Ecology

Activity #36

Subject Area:

Science

JOB CHEMISTRY

Capsule Activity Description:

Students investigate professional applications of qualitative and quantitative chemical analysis by interviewing and then role playing appropriate professionals in the field.

Teaching Prerequisites:

materials needed: none unless students request a specific material for their test
contacts with community: interviews with people who must make chemical tests in their work; guest speaker involved in chemical quality control anaylsis (optional)
approximate preparation time: 2-3 hours
approximate class time: 1½-3 classes

Science Area Objectives:

to learn important applications of qualitative and quantitative chemical analyses in quality control industries and in monitoring pollution data; to learn the chemical reactions involved in various chemical analyses; to learn the mechanics of technical monitoring devices used in industry and government agencies in their quality control.

ACTIVITY

Students break into small groups. Each group interviews an individual whose work involves chemical analysis in the health and safety fields, for example, pharmacists, industrial chemists, biochemists (drug companies, etc.), pure food and drug administraiton officials, chemical safety consultant (fuel shipment, etc.), lab technicians, government officials (food inspectors), sanitary engineers, water pollution inspectors, air pollution inspectors, fire fighters (flammability inspection), consumer control board members, poison control board members. If few of these professionals are available in your community, one can be invited to the class as a guest speaker to answer student questions. A third alternative is to have students write letters to specific individuals or companies that work with chemical analysis.

Students can identify appropriate places to visit and people to interview and write to through the list of companies and associations listed in the Resources.

In addition, students' parents and relatives may be a useful source for contacts. Finally, local city, county, or state government departments concerned with monitoring safety and health in your community will be able to identify appropriate and interested people to interview.

Questions students can pose include:

1. What chemical tests are involved in your job?
2. What must one know about chemical analysis in your job?
3. What are potentially dangerous chemical substances and reactions which you work with?
4. What do you do to promote general health and safety?
5. What government control regulations affect your job?
6. How are these government regulations enforced?
7. What other jobs are available in this department, industry, business, etc.? Can you give a brief description of each?
8. How are people trained to fill these jobs? School? Apprentice programs?
9. Must a person have a license or other certificate to work in your field?
10. Is there equal opportunity for women and minorities?

Students arrange in advance to see some simple chemical tests and/or reactions related to the occupation. (A guest speaker can be asked to bring a sample chemical testing kit along so that he or she can demonstrate a simple test.)

Each group asks for a suggeston of one **safe, simple** test or chemical reaction it can share with the class, such as a pharmaceutical compound which decomposes over a period of not more than four weeks, blood typing, and dissolved oxygen content of water.

If students write to companies, they can ask for a description of chemical tests or reactions that could be shown in class.

As part of its final report of its findings to the class, each group demonstrates a chemical test or reaction and explains:

1. What chemical principles are involved.
2. How the experiment is related to the job of the person this group interviewed.
3. What the job opportunities are in the field.

Resources: Students and teachers can write to the following for further information:

- Ciba-Geigy Corporation
  Ardsley, New York 10502
- The American Pharmaceutical Association
  2215 Constitution Avenue, N.W.
  Washington, D.C. 20037
- American Medical Techologists
  710 Higgins Road
  Park Ridge, Illinois 60068
- American Society of Medical Technologists
  Suite 1600, Hermann Professional Building
  Houston, Texas 77025

200

- American Society of Sanitary Engineering
  228 Standard Building
  Cleveland, Ohio 44013
- American Waterworks Association
  Two Park Avenue
  New York, N.Y. 10016
- Water Pollution Control Federation
  3900 Wisconsin Avenue
  Washington, D.C. 20016
- Interstate Conference on Water Problems
  c/o Council of State Government
  1735 DeSales Street, N.W.
  Washington, D.C. 20036
- Air Pollution Control Association
  4400 Fifth Avenue
  Pittsburgh, Pennsylvania 15213
- Air Pollution Control Office
  Office of the Commissioner
  Parklawn Building
  5600 Fishers Lane
  Rockville, Maryland 20852
- Environmental Protection Agency
  Waterside Mall
  4th and M Streets, S.W.
  Washington, D.C. 20460
- American Chemical Society
  1155 16th Street, N.W.
  Washington, D.C. 20036

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Broadcast Technician
- Audiovisual Technician
- Photographer
- X-ray Technician
- Media Engineer
- Television Technical Director
- Television, Radio, Camera Repairperson
- Film Camera Operator

SCIENCE RELEVANCE:

- Sound
- Electricity
- Light
- Chemistry
- Mechanics
- Physics
- Photography

Activity #37

Subject Area:

Science

PICTURE-PERFECT JOBS

Capsule Activity Description:

Students research, explore and analyze the interrelationships of light, sound, electricity, chemistry and mechanics in audiovisual production by interviewing appropriate professionals in the field and constructing an experiment or display.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with professionals in careers relating to science to audiovisual production
approximate preparation time: 2-4 hours
approximate class time: maximum 1-3 classes

Science Objectives:

to learn the interrelationships of light, sound, electricity, chemistry, and mechanics to the production of audiovisual materials; to better understand the role of science in media and communication; to explore the history and scientific development of audiovisual materials; to use audiovisual techniques to communicate this knowledge to others.

ACTIVITY

In this activity, students present a science and career fair whose exhibits emphasize the role of science in audiovisual production.

Each student selects an audiovisual area which he or she wants to research from among the options provided later in this activity. The class then breaks into small groups around these common areas of interest. Each group begins the activity by determining how it plans to conduct its research so it can develop a science exhibit for the fair. Research methods the groups can utilize include:

- visiting retail and wholesale stores which sell or repair audiovisual products and interviewing the personnel;
- visiting locations where audiovisual materials and products are on display or used, such as

museums, libraries, audiovisual centers, movie houses, television and radio stations, hospitals, and photography darkrooms;

- visiting industrial sites where audiovisual equipment and components are manufactured;
- interviewing members of associations and unions whose membership consists of broadcasters, audiovisual technicians, photographers, and other professionals in audiovisual fields; and
- reading appropriate literature in libraries.

Addresses for several appropriate resources are included in the Resources section at the end of the activity.

While the questions suggested below for students to research relate to the **scientific** aspects of audiovisual fields, instruct students to also research **career-related** issues in each audiovisual area, including such questions as:

1. What jobs are there in this particular audiovisual field and what tasks do they involve?
2. What skills are involved in these jobs and where does a person obtain them?
3. What motivates people to seek these jobs? Are people attracted by the glamour associated with them? by the type of people (actors, actresses, etc.) they work with? by the opportunity to meet interesting people? by the involvement of scientific principles and experimentation? by the salary? by the change to apply creativity and exercise initiative?
4. Are people attracted to audiovisual fields because many people in the field seem to be "liberal," "liberated," "off-beat," "individualistic" and, in general, independent thinking and acting persons? Do these stereotypes have any validity? Do people become more "liberal" after entering the profession rather than bringing their alleged "liberalism" to their work?
5. How dependent are professionals in audiovisual fields on being union members? What do they do to join and what services does the union provide them? Does the union discriminate in any way against new members?

After conducting their research, students report back to their small groups to share what they learned and to develop their exhibits. Instruct students to:

- relate their projects to careers in their field of study;
- make projects clear and simple;
- make projects which several other students can see or experience at the same time;
- emphasize in their projects **science** principles, such as chemistry, electricity, mechanics, and sound, and not just audiovisual materials and processes;
- suggest that with appropriate projects students can plan a role play for the class in which they simulate the audiovisual action involved (e.g., filming a movie, X-raying a patient, editing a filmstrip, repairing a television).

For the science/career fair itself, set up the experiments and displays in different areas of the classroom. If possible, use a double-size classroom or study hall so that the experiments and displays do not have to be dismantled after the class. Encourage other classes to visit and your students to explain their projects to all comers.

The following are suggestions for research areas in audiovisual fields. You may want groups of students to combine two or more of them (e.g., numbers 1 and 3) or break them down into more discrete units of study (e.g., break down number 8, film production, into camera, lights and sound).

1. The Development of Photography

a. How would a museum curator present this project?
b. Who were early pioneers in still photography?
c. What were some precursors of the camera? (Examples: camera obscura, pin-hole camera)
d. What mechanical processes were involved? What chemical processes?
e. Who were some famous early photographers?
f. What techniques did the early pioneers in photography use in their laboratory work?

2. The Development of Cinema

a. How would a professor present a dynamic, visually stimulating introduction to the cinema?
b. What are some early examples of cinema? (Example: magic lantern)
c. What mechanical principles were involved in developing the cinema?
d. How did discoveries in electricity influence technical developments in the cinema?
e. When and how was sound integrated into motion picutres? Why did it take so long to accomplish?

3. Current Photographic and Film Research

a. What are some of the latest film videotape and photography developments?
b. What chemical, mechanical and/or electrical processes are involved?
c. How does work with videotape differ from work with motion picture film?

4. Television, Radio, Camera Repair, etc.

a. How does one train to be a television (radio, etc.) repair person?
b. What mechanics, electricity, etc. are involved in television repair?
c. How does a television work? What makes a television picture? (Students may wish to take apart old radios and televisions and then reconstruct them. **Warning:** Don't have students plug in their experimental appliances until a mechanic has checked them for safety.)

5. X-ray Technician

a. How are X-rays different from regular photography?
b. What are the major mechnical, electrical, and chemical principles involved in X-raying?
c. How does one develop X-rays?
d. How does one read X-rays?

6. Radio Technicians

a. What do radio engineers and transmitters do?
b. How do sound waves carry sound?
c. How has space travel affected radio communication? How will this change the radio industry?

d. How are radio waves different from sound waves?

7. Film Equipment: Research and Repaair

a. What mechanical principles are involved in a camera?

b. Ask for diagram of the working of a photography company's camera. How does this camera work?

c. Ask for a catalog of all equipment this company carries.

8. Film Production

a. What jobs are available in motion picture productions?

b. What chemical, mechanical, and electrical principles are involved in the roles of camera operator, assistant camera operator, electrician or "gaffer," sound technician, etc.?

9. Television Production—Video Tape

a. How does video tape work? What chemical, mechanical, and other scientific principles are involved?

b. How do the camera operator and lighting electrician work together?

c. How is video tape different from film?

d. What are some of the latest developments in video tape? How will these developments affect jobs in the television industry?

e. What happens in the television control room?

f. What does a television technical director do?

g. How are TV signals transmitted and received?

10. Photography Development: Still

a. What training is needed to learn how to develop pictures?

b. What chemical processes are involved? What are the functions of the different chemicals?

c. How does one retouch photos?

d. What light and filter processes are involved?

11. Film Development Lab

a. What chemical processes are involved in color matching?

b. What is an answer print? What are rushes?

c. What special effects can be done in the film lab?

Useful Prior and Subsequent Activities:

- Students can do volunteer or apprentice work in an audiovisual field, helping a photographer, X-ray technician in a hospital, or television or radio repair person.
- Students can create an audiovisual product in school or after school, such as a movie, filmstrip, tape recording, photographic essay, or videotape.

Resources:

- National Association of Photo Equipment Technicians
  1240 Mt. Oliver Road N.E.
  Washington, D.C. 20002
- Master Photo Dealers' and Finishers' Association
  603 Lansing Avenue
  Jackson, Michigan 49202
- National Association of Photographic Manufacturers
  600 Mamaroneck Avenue
  Harrison, New York 10528
- Professional, Commercial, and Industrial Markets Division
  Eastman Kodak Company
  Rochester, New York 14650
- Biological Photographic Association, Inc.
  P.O. Box 1057
  Rochester, Minnesota 55901
- WGBH-TV
  125 Western Avenue
  Allston, Massachusetts 02134
- Polaroid Corporation
  730 Main Street
  Cambridge, Massachusetts 02139
- Yellow Ball Workshop (film)
  62 Tarball Avenue
  Lexington, Massachusetts 02173
- International Alliance of Theatrical and Stage Employees
  1270 Avenue of the Americas
  New York, New York 10020
- National Association of Broadcasters
  1771 N. Street N.W.
  Washington, D.C. 20006
- Professional Photographers of America
  1090 Executive Way
  Oak Leaf Commons
  Des Plains, Illinois 60018
- National Association of Broadcast Employees and Technicians
  135 West 50th Street
  New York, New York 10019

Activity #37

- National Alliance of Television and Electronic Service Associations
  5906 South Troy Street
  Chicago, Illinois 60624
- National Broadcasting Company
  30 Rockefeller Plaza
  New York, New York 10020

Students can read:

- **The History of Photography.** Beaumont Newhall: The Museum of Modern Art (New York: 1964). Paperback.
- **Life Library of Photography.** Time-Life Books (New York: 1971). Hardbound series. Useful examples: **The Camera, The Print, Light and Film, Photography as a Tool, The Studio, Photographing Nature** and **The Great Photographers.**
- **Photography.** Eric de Maré, Penguin Books (Baltimore: 1970). Paperback. Comprehensive review of all aspects of the field.
- Film: "Cameras and Careers," Eastman Kodak Co., Audio-Visual Service, 343 State Street, Rochester, New York 14650

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Farmer
- Food Distributor
- Food Wholesaler
- Food Retailer/Grocer
- Meat Inspector
- Slaughterhouse Operator
- Oil Refinery Engineer
- Oil Well Rigger
- Oil Tanker Operator
- Gas Station Manager
- Heating Oil Distributor
- Electrician
- Electric Appliance Repair Person
- Electric Appliance Dealer

SCIENCE RELEVANCE:

- Biology
- Electricity
- Environmental Science
- Earth Science
- Physics
- Chemistry

Activity #38

Subject Area:

Science

WORKING TO PRODUCE FOOD, HEAT, AND LIGHT

Capsule Activity Description:

Students examine the development, distribution and marketing relationships involved in the production of food, petroleum and electrical energy and then demonstrate and discuss these relationships through displays, flow-charts and/or role playing in class.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with professionals involved in the production, development, distribution and marketing of food, petroleum and electricity; letters to professionals in those fields not represented in the local community (optional)
approximate preparation time: 2-4 hours
approximate class time: 1-3 classes

Science Area Objectives:

to analyze the role of science in the development, distribution and marketing of food, petroleum, and electrical energy products; to learn health requirements and regulations in specific basic production industries; to develop an understanding of how science is important in discerning various marketing techniques and to become a more educated consumer of food, petroleum and electrical energy products.

ACTIVITY

Procedure: Class divides into four groups. Each group investigates one of the following areas:

1. Food products–vegetable
2. Food products–animal
3. Petroleum products
4. Electrical energy

and all of the following topics:

1. Development
2. Distribution
3. Marketing and uses

Activity #38

The groups and topics they treat may be altered at your discretion and their appropriateness to the subject matter covered in your class, although this activity is designed to show interdisciplinary relationships in science.

Students divide the work within the group in whatever way they feel they can accomplish the most research. For example, one group may wish to divide into three subgroups to examine development, distribution, and marketing.

Each group makes a file listing as many jobs and job characteristics related to "their" field as possible. Students can also use the library to research this information.

Students can identify appropriate and interested people to interview by contacting relevant school staff who are involved themselves in the field (e.g., food purchasing agent, maintenance persons, school electrician), parents and relatives who may be employed in these fields or know someone who is, and by writing to the addresses listed in the resources for suggestions.

Group I: Foods—Vegetable

This group examines (1) fruits and vegetables and (2) grains.

1. Development: Group visits a farmer who grows fruits and vegetables, a farmer who grows grain, corn, wheat, etc., or a local organic gardener. Group asks:
   - What background is required to grow foods successfully?
   - What problems do farmers face? (e.g., drought, floods, insects.)
   - What insecticides do the farmers use?
   - What chemicals are involved in these insecticides and how dangerous are they?
   - What are the satisfactions of being a farmer?
   - Why are so many farmers leaving for the city?
   - Can a "city slicker" become a farmer?
   - What skills and knowledge are needed to become a farmer?
   - Do people tend to become farmers by simply "following in their father's or mother's footsteps"?
2. Distribution: Group visits a bakery or cereal processing plant. Group asks:
   - What jobs are involved during distribution? What skills are needed for each?
   - How do different kinds of milling affect the nutritional content of the grain? What are the differences between bleached, whole wheat, cracked wheat, etc. bread?
   - How are cereals and baked goods kept from spoiling?
   - What chemicals are used in preservatives and how do these chemicals affect the body?
3. Marketing and uses: Group visits the local grocer and asks:
   - What jobs are involved in marketing? What skills are needed in each?
   - How do grocers keep food from spoiling in the store?
   - What health regulations must grocers follow?
   - What do you enjoy or dislike about your job?
   - Why did you decide to become a grocer?

Group II: Foods—Animal

This group examines (1) poultry and eggs; and (2) beef.

1. Development: Groups visits or writes a chicken farm, cattle ranch, piggery, etc. and asks:
   - What background is needed to raise livestock successfully?
   - How must one care for and feed the animals?
   - What should the livestock producer know about veterinary medicine and animal diseases?
   - (See occupation-related questions above for farmers.)
2. Distribution: Group visits or writes a slaughterhouse to ask:
   - What jobs are involved in distribution? What skills are required for each?
   - How are animals killed in a slaughterhouse?
   - How is meat inspected?
   - What chemical processes are used in meat inspection?
   - How is meat sectioned and packaged for shipment?
   - What health regulations must one follow in shipping meat?
   - Do you find any of your work unpleasant—the killing and blood, for example? Did you at first?
   - What do you like about your job?
   - How did you decide to work in a slaughterhouse?
3. Marketing and uses: Group visits local butcher and asks:
   - What jobs are involved in marketing?
   - How do butchers cut meat to make it as tasty as possible?
   - What displays and advertisements do butchers use to draw customers?
   - What makes a piece of meat tasty or tender, tasteless or tough?
   - Do you like your job?
   - What problems do you have to cope with in dealing with customers?
   - How did you decide to become a butcher? How did you learn the skills?

Group III: Petroleum Products

1. Development: Group visits or writes a petroleum processing plant and asks:
   - What are the different jobs in a petroleum plant? Are they enjoyable?
   - How is petroleum processed for cars? heating? stoves? etc.
   - What chemical processes are involved in refining petroleum?
   - What waste products are given off by refineries?
   - How are these waste products controlled and/or reused by the refinery?
   - What by-products are used by other industries?
2. Distribution: Group writes to a gas pipe line and/or gas trucking company and asks:
   - What jobs are involved during distribution?
   - How are gas pipe lines laid? repaired?
   - How is gas moved through the pipes?
   - How are gas trucks constructed?
   - What safety regulations govern gas pipe lines and gas trucking?
   - What dangers are involved in shipping petroleum products?

- What do you like about your job?
- How did you train for it?

3. Marketing and uses: Group visits local gas station, visits or writes local gas utilities company, and and/or visits someone who sells gas appliances, stoves, etc. Group asks:
   - Where is gas stored in a gas station?
   - What do the different grades of gasoline mean?
   - How does a gas pump work?
   - What services should a gas station provide?
   - What safety regulations must one follow in a gas station? Why?
   - How is gas distributed to homes?
   - How does the utility company know how much gas a person uses?
   - What are the dangers of using gas in the home? Example: gas leaks.
   - How does a gas stove work?
   - What other household appliances are powered by gas?
   - What do you enjoy and dislike about your job?
   - What training did you need?

Group IV: Electrical Energy

1. Development: Group visits or writes to a dam, fossil fuel, or nuclear plant where electrical energy is generated and asks:
   - How are dams built? Steam generators? Nuclear reactors?
   - What jobs are involved?
   - How is electrical energy generated?
   - What other functions does the dam fill in addition to the generation of electricity?
   - What must the different employees at the generating plant know about electricity, hydrology, radioactivity, etc.?
   - In what ways might dams, fossil fuel plants and nuclear power plants be harmful?
   - What, exactly, do you do as part of your job? Do you enjoy your work?
   - What training did you need to get your job?
2. Distribution: Group visits or writes to an electrical relay or transmission station and asks:
   - Who works at a station?
   - How is electricity stored?
   - How do electric power lines transmit electricity?
   - How are electric power lines constructed?
   - What must a power lineperson know about electricity?
   - What are the hazards of working on a power line?
   - What training is needed to do these jobs?
   - What do you enjoy and dislike about your job?
3. Marketing and uses: Group visits an electrician and/or an electrical appliance dealer. Group asks:
   - How are houses wired?

- How is wiring insulated?
- What safety precautions must you take in working with electricity?
- How does electricity power electric appliances?
- How are electrical appliances repaired?
- What training is needed to become an electrician?
- Is it difficult to get work if you're not in the union? Is it difficult to join the union? Does the union or the profession discriminate against women and/or minorities?
- Why did you decide to become an electrician?

Students demonstrate and discuss their research to the class using displays, flow-charts and role playing playing. Divide the class time equally among the four groups. Remind students to emphasize both career and scientific information.

Role plays should:

1. Describe the production of the goods step-by-step from development through marketing;
2. Bring in all occupations related to the production; and
3. Utilize all students in the group.

Students develop their own role play scenario based on their research. Examples might be:

- Customer bringing into an appliance repair person a defective toaster to be fixed.
- Homeowner greeting electrician at the door and explaining that the electricity isn't working.
- Typical day in the life of a farmer.
- Grocer serving different customers.

Make a file of the jobs of all four groups. Ask students to peruse the files at their leisure.

Useful Prior and Subsequent Activities:

- Students may make their own brand of cereal by following hints from a cookbook for making familia, granola, etc.
- Students can visit, work in, or set up a food cooperative.

Resources: Students and teachers can write to the following for further information:

- American Trucking Association
  1616 P Street, N.W.
  Washington, D.C. 20036
- Agricultural Research Service
  U.S. Department of Agriculture
  Washington, D.C. 20250
- National Association of Retail Grocers of the United States
  360 North Michigan Avenue
  Chicago, Illinois 60601

- American Meat Institute
  59 East Van Buren Street
  Chicago, Illinois 60605
- American Geological Institute
  2201 M Street, N.W.
  Washington, D.C. 20027
- Consolidated Edison Company of New York, Inc.
  4 Irving Place
  New York, New York 10003
- Mobil Oil Corporation
  150 East 42nd Street
  New York, New York 10017
- Exxon Corporation
  1251 Avenue of the Americas
  New York, New York 10020
- American Gas Association
  1515 Wilson Blvd.
  Arlington, Virginia 22209
- Consolidated Natural Gas Company
  30 Rockefeller Plaza
  New York, New York 10020
- National Appliance and Radio-TV Dealers Association
  318 West Randolph Street
  Chicago, Illinois 60606

The following games can prove useful with this activity:

- **Baldicer.**
  John Knox Press,
  P.O. Box 1176,
  Richmond, Virginia 23209
- **The Planet Management Game.**
  Houghton Mifflin Co.,
  One Boston Place,
  Boston, Mass. 02107

Comments from Teachers and Students after Using The Activity:

OCCUPATIONAL FOCUS:

- Airplane Pilot/ Navigator
- Airplane Flight Engineer
- Mechanic
- Control Tower Director
- Truck/Bus Driver
- Railroad Engineer/ Worker
- Sailor

SCIENCE RELEVANCE:

- General Science
- Earth Science
- Biology
- Oceanography
- Mechanics
- Health
- Astronomy

Activity #39

Subject Area:

Science

UNDERSTANDING TRAVEL JOBS

Capsule Activity Description:

Students investigate the relationships of the sciences of navigation, mechanics and biology to the transportation fields of aeronautics, highway, rail and water by library research and interviewing appropriate professionals in the field.

Teaching Prerequisites:

materials needed: provided by students
contacts with community: interviews with appropriate professionals in the field; guest speaker on science and transportation (optional)
approximate preparation time: 3-4 hours
approximate class time: 1½-4 classes

Science Area Objectives:

To learn simple navigation techniques and tools and mechanical requirements for various forms of transportation; to learn about and appreciate certain physical and biological hazards involved in the transportation of goods and/or people; to learn symptoms and treatment of biological disorders commonly found in travelers; to learn about transmission and prevention of certain communicable diseases carried by travelers.

ACTIVITY

The class divides into four groups. Each group researches the science issues and occupational aspects of navigation, mechanics and biology in one of the following transportation fields:

- Air
- Rail
- Water

The groups begin with research in the library to examine:

- Navigation, mechanics, biology as related to the groups' transportation area.

- Types of jobs in their transportation area.
- Job qualifications—especially those related to the sciences of navigation, mechanics, biology.

Each student in the group may research one specific science and transportation oriented career (e.g., aeronautics engineer—motorcycle repair) or students may interview appropriate professionals involved in the specific transportation field in question. Arrangements for interviews should be made by students in advance of the actual interview.

Students can identify appropriate and interested people to interview through their parents, who may work in these fields or know people who do, through local city, county, and state government agencies which have authority over these industries, and by writing to one or more of the associations listed in the resources requesting the names and addresses of appropriate local contacts.

Students examine the following specific types of questions:

1. Navigation:
   - What are a navigator's tools? (E.g., maps, land marks, radio, sextant, radar.)
   - How are latitude, longitude or location determined at any given time?
2. Mechanics:
   - What principles of mechanics are used in the assembly of transportation vehicles?
   - What drives different kinds of vehicles? (E.g., engine, diesel, jet propelled, atomic, wind, water currents)
3. Biology:
   - What are bacteriological problems?
   - How is disease spread?
   - What safety precautions are necessary for good health?
   - What medical problems are common to travelers? (E.g., seasickness, motion sickness, highway hypnosis, jet-lag, changing pressure, depth, altitude, speed.)

In a class, the groups meet to share and discuss their research, compare jobs and job qualifications and discuss job hazards and how science can remove or lessen these job hazards. Students then role play different transportation professionals and explain how science is involved in their occupation. For example, students can role play the following situations and ones they develop related to the areas they researched:

- Navigator plotting a planned route for a ship or plane
- Assembly line putting together the parts of a car
- Repairperson fixing a vehicle
- Travelers going to different places taking appropriate health precautions.

During the last 15 to 20 minutes of the period, each of the four groups breaks into three subgroups—one of each science. The subgroups then demonstrate a simple experiment which is linked to the transportation and the science area they have been assigned.

- For example, for road and highways mechanics, students can make a working model of a piston and explain how it works in a car engine.
- For rail and biology, students can take 2 moldy pieces of bread and "quarantine" one in a tightly sealed small box. They put the two pieces of bread into two separate large boxes with some un-

moldy bread. Group observes whether "quarantine" box placed on the one slice of bread helps to keep the mold from spreading.

- For water and navigation, students can make or borrow a sextant and read their position on the globe.
- (Students may need at least two weeks for the biology experiment.)

If geographic location makes student interviews with professionals involved in transportation and science difficult, try to arrange for one transportation professional to be a guest speaker to your class to answer transportation related questions.

Useful Prior and Subsequent Activities: Ask students to think about how mechanics, engineering and biology apply to the vehicles they ride in, such as school buses, subways, boats or cars. Students can also discuss these sciences with the operator of the vehicle.

Resources: Students and teachers can write to the following for further information:

- U.S. Public Health Service
  Office of Public Inquiries
  Bethesda, Maryland 20034
- Interstate Conference on Water Problems
  c/o Council of State Government
  1735 DeSales Street, N.W.
  Washington, D.C. 20036
- National Oceanic and Atmospheric Administration
  Institute for Oceanography
  Gramex Building
  8060 13th Street
  Silver Spring, Maryland 20910
- International Airline Pilots Association
  55th Street and Cicero Avenue
  Chicago, Illinois 60638
- Flight Engineers' International Association
  100 Indiana Avenue, N.W.
  Washington, D.C. 20001
- Air Transport Association of America
  1000 Connecticut Avenue, N.W.
  Washington, D.C. 20036
- Aerospace Industries Association of America
  1725 DeSales Street, N.W.
  Washington, D.C. 20036
- International Association of Machinists
  and Aerospace Workers
  1300 Connecticut Avenue, N.W.
  Washington, D.C. 20036
- National Aeronautics and Space Administration
  Washington, D.C. 20546

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- Airline Dispatchers Association
  929 West Broad Street
  Falls Church, Virginia 22046
- Transport Workers Union of America
  210 West 50th Street
  New York, New York 10019
- American Transit Association
  815 Connecticut Avenue, N.W.
  Washington, D.C. 20006
- Greyhound Bus Lines
  140 South Dearborne Street
  Chicago, Illinois 60607
- Association of American Railroads
  American Railroad Building
  1980 L Street, N.W.
  Washington, D.C. 20036
- United Transportation Union
  15401 Detroit Avenue
  Lakewood, Ohio 44107
- International Brotherhood of Boilermakers, Iron Shipbuilders, Blacksmiths, Forgers and Helpers
  Eighth at State Avenue
  Kansas City, Kansas 66101

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Chemist
- Chemical Engineer
- Chemical Plant Official
- Machinist
- Shipper
- Steel Mill Official
- Plastics Plant Official
- Textile Manufacturer

SCIENCE RELEVANCE:

- Chemistry
- Physics
- General Science

Activity #40

Subject Area:

Science

PRODUCING CHEMICALS, PLASTICS, AND SYNTHETICS

Capsule Activity Description:

Students investigate the production of industrial chemicals, plastics, steel, and synthetic fabrics by interviewing and then role playing appropriate professionals in the field.

Teaching Prerequisites:

materials: none
contacts with community: interviews with heavy materials industries; guest speakers from materials industry (optional); field trip to heavy materials industry (optional)
approximate preparation time: 2-3 hours
approximate class time: 1-2 classes

Science Area Objectives:

to learn the chemical processes involved in the production of steel, textiles, plastics and industrial chemicals; to learn various tests used in the quality control of these materials before marketing; to learn the dangers involved in working with materials production.

ACTIVITY

The students break into four groups. Each group visits or writes to one of the following:

1. Industrial chemical plant
2. Plastics plant
3. Steel mill
4. Synthetic fiber manufacturing plant

Groups examine jobs in these companies, as well as the chemical processes that are used in the plants. Each groups learns about two chemical processes used by the company it visits or writes to.

Students can identify appropriate interested industries to visit by contacting teachers in the school's

vocational education program, parents and relatives who may work in an appropriate industry or know someone who does, and looking through the Yellow Pages of the phone book. The actual arrangements for the interviews can be made through the personal contact (parent, teacher, etc.) and/or the industry's personnel or public relations office.

If one of more of these industries is not located in your specific area, you can do one of the following:

1. Limit the students to the specific industries available.
2. Arrange for a person who is familiar with one of the other industries to be a guest speaker in class on the chemical processes and occupations available in that industry.
3. Have students write letters to various industries asking for specific information on chemical processes and occupations available in those industires. (Allow at least 4 weeks for responses to these requests.)
4. Have groups of students research the various industrial materials production in the library and list the chemical processes involved in each industry and the different occupations available.

The information gathered by the students in these procedures will enable them to role play the occupations.

Each group compiles a list of the types of jobs available in the company that the group investigates and seeks answers to the following three questions:

1. What chemical and physical processes are used by the employees in each occupation?
2. What training is needed for these occupations?
3. Which positions are often open for new employees?

Groups can also investigate one or more of the following areas:

- Why are industrial chemicals developed?
- What social and industrial needs do these chemicals fill?
- What are the dangers of working with chemicals?
- What chemical processes are involved in testing these industrial chemicals before marketing?
- What must the various employees of a chemical company (barrel fillers, shippers, loaders, machinist, chemical operator, chemical engineer, plant designer, etc.) know about chemicals?

Specific questions students can ask about each material follow.

Plastics:

- What materials are used to make plastics?
- What chemical changes do these materials undergo?
- How is plastic made?
- What must each employee of a plastics company know about chemicals?
- What are possible dangers or jobs hazards involved in making plastics?

Steel:

- How are the various kinds of steel produced, including galvanized, hot roll, cold roll, tin plate, etc.?

- What chemical processes are involved in making alloys? plating? etc.?
- What equipment is used in making steel?
- What must employees in a steel mill know about chemistry?
- What chemical processes cause problems in the steel industry? (E.g., rust.)

Synthetic fibers:

- What are some of the advantages of synthetic fibers over natural fibers?
- What materials are used to make synthetic fibers? Example: nylon, dacron, polyester, orlon, rayon, etc.
- What chemical changes do these materials undergo?
- How are synthetic fibers produced? In what forms?
- What must various employees in a synthetic fiber plant know about chemicals?
- What are the possible dangers or job hazards involved in synthetic fiber and textile manufacturing?

Each group, after conducting its research, demonstrates for the class how specific chemical processes are used in the different occupations studied by role playing different situations involving chemistry.

Role plays should:

1. Describe the chemical processes step-by-step;
2. Include all occupations related to these chemical processes;
3. Utilize all students in the group.

Each group develops its own situation. Two examples might be:

- Ann Washington has just discovered a new synthetic fiber. What are the steps from inception to the public market?
- Robert Harmon is a grounds and maintenance engineer for a large automobile plant. How does he test whether or not a newly developed door sealing plastic is suitable for sealing leaky factory roofs?

Useful Prior and Subsequent Activities: Experiments can be done in the classroom involving the production of nylon or plastic and the testing of properties of different alloys of steel.

Resources: Students and teachers can write to the following for further information:

- American Institute of Chemical Engineers
  345 East 47th Street
  New, N.Y. 10017
- American Chemical Society
  1155 Sixteenth Street, N.W.
  Washington, D.C. 20036
- Manufacturing Chemists Association
  1825 Connecticut Avenue, N.W.
  Washington, D.C. 20009

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- U.S. Steel Corporation
  600 Grant Street
  Pittsburgh, Pennsylvania 15230
- Bethlehem Steel Corporation
  Bethlehem, Pennsylvania 18016
- E.I. DuPont de Nemours and Company
  1007 Market Street
  Wilmington, Delaware 19898
- Monsanto Company
  800 North Lindbergh Blvd.
  St. Louis, Mo. 63166
- W. R. Grace and Company
  3 Hanover Street
  New York, N.Y. 10004
- The Dow Chemical Company
  Midland, Michigan 48640
- Burlington Industries, Inc.
  3330 W. Friendly Avenue
  Greensboro, N.C. 27410

Comments from Teachers and Students after Using the Activity:

Section Five: OTHER SUBJECT AREAS

1. ACTIVITIES SUMMARY

This section of the manual contains two activities each on: art and music, driver education, foreign languages, health education, and physical education. Titles and capsule descriptions of each follow.

41.* **PAINTING AND PLAYING FOR A LIVING:** Students evaluate their potential for a professional career in art or music by interviewing artists and musicians.

42. **SUPPORTING THE ARTS:** Students investigate and evaluate careers that involve art or music by interviewing individuals in those occupations.

43. **WORKING BEHIND THE WHEEL:** Students investigate, through research and interviews, careers which use the driving skills that they are learning.

44. **WORKING AT DRIVING SAFELY:** Students examine careers that influence the condition of their automobiles and the safety of their driving.

45. **TRANSLATING THE PROBLEM:** Students simulate a series of encounters between foreign language speaking persons and social service agency employees

46. **WORKING IN A FOREIGN LANGUAGE:** Students interview or write to multi-national companies and organizations to learn how foreign language skills are used by their employees.

47. **FIRST AID ON THE JOB:** Students visit industries and/or farms to research occupational injuries and first aid techniques used to treat them.

48. **HEALTH SUPPORTS:** Students explore medical support services in their community by interviewing appropriate professionals in the field.

49. **WORKING TO STAY IN SHAPE:** Students interview people whose careers are linked with physical education, discuss attitudes toward sports, and set up their own physical education program.

50. **SUPPORT FOR PHYSICAL FITNESS:** Students investigate careers related to the sports and recreation industries by interviewing employees in these industries.

2. INTRODUCTION

As a teacher of health education, driver education, music, art, foreign languages or physical education, you should consider career education as an integral and appropriate component of your teaching which will **increase your students' ability and motivation to learn subject area content and skills.**

How will the integration of career education activities into your course help you achieve your subject area objectives? There are at least three answers to this question.

1. While engaging in the career education activities provided in this manual, your students will learn a great deal about the subject area **topics** that are related to the career or occupation they are studying. For example, if a student engages in volunteer work in a hospital or museum, the student is also going to learn a great deal about health or about art. Learning about careers in these fields automatically involves learning about health or art issues and problems.

   In addition you can add a real-life or simulated learning component to your theoretical classroom teachings through the use of the activities provided here, because most of these activities involve students in actually **doing** things, from volunteer work to role plays to field trips. As such, these career education activities can help students comprehend better the theoretical aspects of health,

*The activities in this section of the manual begin with number 41 because the numbering continues sequentially after the last activity (number 40) of the previous section of science activities.

driving a car, music, art, foreign languages or physical education by seeing or engaging in the practice of careers related to them. Theory and reality are combined for a strong total learning experience.

In short, learning about careers in these field automatically involves meaningful learning about health education, music, etc. **subject matter.**

2. Many of the **skills** in these course areas are developed or reinforced through the use of career education activities, including such skills as first aid (health education), pronunciation (foreign languages), performance (art, music), and safety (driver education, physical education.). For example, if your class interviews ward nurses on the administration of emergency care and then role plays an emergency ward, the students will be developing skills in providing first aid.
3. By including career education activities in your courses, you will increase your students' **motivation** to study and learn about your subject area's topics and develop related skills. By studying careers related to health education, foreign languages, etc., in exciting action-oriented ways, students will be stimulated to delve further into the field related to the occupations they are investigating. For example, driver education students who study truck driving as a career by interviewing truckers will probably want to learn more about vehicular safety and driving skills. Health education students who observe a hospital emergency ward in action will want to learn more about accident prevention. In this manner, career topics have the attractiveness of "re'evance" for studying and learning subject area content matter and skills. Activities dealing with concrete, current occupations of personal concern to your students can add motivation to the disaffected as well as involved student who wants to know what health education, art, or foreign language study has to do with the world of an adult: "Can studying irregular verb endings get me a job?" is the unspoken query of many students today.

How can integration of career education with physical education, foreign languages, music, art, health education and driver education operate in practice?

For an illustration of how you can integrate the activities into your existing class lesson plans, examine one or more of the hypothetical Sample Week's Lesson Plans and accompanying explanation provided in each of the prior subject area sections of the manual.

OCCUPATIONAL FOCUS:

- Teacher
- Performer
- Composer

ART/MUSIC RELEVANCE:

- Performance
- Composition

Activity #41

Subject Area:

Art/Music

PAINTING AND PLAYING FOR A LIVING

Capsule Activity Description:

Students evaluate their potential for a professional career in art or music by interviewing artists and musicians.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with professional artists and musicians
approximate preparation time: ½-1 hour
approximate class time: 1½-3 classes

Art/Music Objectives:

To learn how to practice and maintain and/or expand painting, sculpture, drawing, or musical skills.

ACTIVITY

This activity is designed to assist art and music students to make career decisions and to learn additional ways to practice their art form. The activity centers around professionals who earn their living as performers or creators, and not the support people (ticket agents, advertisers, museum staff, etc.) who make it possible for the performer or creator to work. (Activity #42 treats this aspect of careers in the fine arts.)

The activity can appropriately be integrated into an art or music course whenever the teacher decides to deal with the problems associated with the skill development and **practice** needed to develop artistic skills, since students will learn much from professionals in the field about techniques for effective practicing of needed skills.

Since the best way to learn what it is like to be a professional musician or artist is to talk with professionals in these fields, the exercise involves interviews with musicans and artists.

Activity #41

The activity can be implemented in several ways:

1. An entire class can participate either individually or in small groups.
2. Only those students who seem interested in potentially becoming a professional artist can engage in the activity, again as an individual or small group project.
3. The class can be divided into two groups: those interested in exploring a professional career as a musician or artist and those more inclined toward a career that supports the professionals. This latter group would engage in the exercises described in the following activity, Activity #2.

Each student or group of students interviews two to five cooperative professionals.* Musicians and artists who might be interested in being interviewed can be identified in a number of ways, including:

- through professionals whom students already know, including their private music or art teachers;
- through the teacher;
- through the local musicians' or artists' union or professional society.

If small groups are formed, each group can conduct its interviews as a group or in sub-groups of two or three.

Small groups can be formed around a variety of artistic areas, such as:

- music composition
- music teaching
- musical instruments–in general or of a specific instrument
- performance of specific types of music–jazz, band marches, rock, classical, blues, etc.
- sculpture
- painting
- drawing
- art teaching

After selecting people to interview, each student or group of students develops questions or areas of interest to bring with them to the interview. Sample topics to ask about include:

- number of years as a professional
- percentage of income from performing/creating
- source of remainder of income
- years of preparation before being able to support self, if ever, by the profession
- type of preparation required to become a professional
- discrimination encountered as a man or woman in the field in terms of hiring or being teased; if discrimination was encountered, how interviewee coped with it
- what motivated the interviewee to become a professional musician or artist
- how professionals develop new skills and maintain old ones
- practice habits–methods and amount of time devoted to practice
- advantages and personal rewards from the career

*Where access to such people is limited, students can write letters to appropriate sources.

- disadvantages or sacrifices required by the career
- recommendations to someone considering a career in the same profession.

After gathering the experiences and suggestions from the professionals, students individually or in small groups organize the information using the following guidelines, which the teacher can duplicate and hand out or place on the chalkboard.

Step One–On a sheet of paper, draw a line separating the page into two columns. Label one column, "Yes! I should" and the other "No! I should not." Using these headings list all the reasons for or against the career using reasons expressed by the professionals. Then add your own reasons.

Step Two–Look over this list and cross out those reasons that do not apply to you. Cross out those that balance out something in the other column. Looking over the edited list, write down the conclusion that you can draw from the facts about whether you might be interested in and fit for a career as a professional musician or artist.

Follow-up class discussion can be held on one or more of the following issues:

1. What practice techniques did the interviewees say they use that students should try out? (You may want to be careful not to intrude into the students' relationship with his or her music or art teacher and merely suggest students discuss with their private teachers these new ideas **before** trying them out.)
3. How much practice is needed to become a professional and to remain one?
3. Is there discrimination in the fine arts professions against men (e.g., as painters) or against women (e.g., as orchestra players and conductors)?
4. What motivated the interviewees to become professional musicians or artists?
5. What motivates members of the class? (the teacher may need to exercise some sensitivity since some students may want to become professionals because of parental pressure or primarily to emulate a parent-artist or idolized artist. One way to respond to such motives is to encourage students to discuss them with each other and share experiences and different ways of responding to them.)

Useful Prior and Subsequent Activities:

- Students can discuss and compare in small groups or as a class how they practice and how much time they devote to practicing their instrument or art medium.
- Class can identify specific techniques for developing specific artistic skills–for example, an arpeggio in music or perspective in painting.
- Professionals, possibly from the local musicians' or artists' association, can be invited to class to discuss students' or groups' conclusions about what careers in the fine arts entail.
- Students can write and/or discuss their reactions to the following response Pablo Casals, the cellist, had when he injured his fingering hand while climbing in Colorado:

  ". . . when I looked at my mangled bloody fingers, . . . my first thought was 'Thank God, I'll never have to play the cello again.' "
- Students can attend an orchestra, jazz band, etc. rehearsal and observe how the conductor or leader identifies places in the music where practice is needed, and note how he or she tells the musicians to correct their error.
- Students can interview women orchestra players about discrimination they may have experienced as women in a male-dominated profession.

Activity #41

Resources: Autobiographies by musicians and artists, such as:

- Artur Rubenstein, **My Early Years** (Popular Library: New York, 1973), paperback
- Pablo Casals, **Joys and Sorrows** (Simon and Schuster: New York, 1970), paperback.
- Artur Schnabel, **My Life and Music** (St. Martin's Press: New York, 1961) paperback.
- Alexander Calder, **An Autobiography With Pictures** (Beacon Press: Boston, Mass.), paperback.
- Harold Bauer, **Harold Bauer, His Book** (W. W. Norton: New York)
- Lawrence Welk, **Wunnerful, Wunnerful** (Bantam Books: New York), paperback.
- Bernard Berenson, **Rumor and Reflection** (Simon and Schuster. New York), paperback.
- Yehudi Menuhin, **Theme and Variations** (Stein and Day: New York, 1972).
- Constantin Stanislavski, **My Life in Art** (Theatre Arts Books: New York), paperback.
- Sir Rudolph Bing, **5,000 Nights at the Opera** (Doubleday: Garden City, New York), paperback.
- Victor Borge, **My Favorite Intermissions** (Doubleday: Garden City, New York, 1971).
- Liberace, **An Autobiography** (Putnam: New York, 1973).
- Gregor Piatigorsky, **Cellist** (Doubleday: Garden City, New York, 1965).
- Marion Anderson, **My Lord What a Morning** (Avon: New York), paperback.
- Ravi Shankar, **My Music, My Life** (Simon and Shuster, New York), paperback.

Associations and unions, such as:

- The American Federation of Musicians
  1500 Broadway
  New York, New York 10036
- or local affiliates
- American Federation of Musicians of
  the U.S. and Canada
  641 Lexington Avenue
  New York, New York 10022
- Arts Equity Association
  2813 Albemarle Street N.W.
  Washington, D.C. 20008
- American Federation of Arts
  41 E. 65th Street
  New York, New York 10021
- National Sculpture Society
  250 E. 51st
  New York, New York 10022
- American Guild of Musical Artists
  1841 Broadway
  New York, New York 10023

- National Academy Galleries
  1083 Fifth Avenue
  New York, New York 10009
- or local guilds

Finally, the following two resources may be helpful:

American Art Directory, 1974. Edited by the Jacques Cattell Press for the American Federation of Arts. R. R. Boulder Co., New York. Contents: Art organizations (U.S. national and regional organizations; Canadian art organizations).

The Official Museum Directory by the American Association of Museums and National Register Publishing Co. Published by the American Association of Museums, Washington D.C., and National Register Publishing Co., Skokie, Illinois.

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Art and Music Supplier
- Museum Staff
- Promoter
- Disk Jockey
- Music Programmer
- Publisher

ART/MUSIC RELEVANCE:

- Social Context of the Fine Arts

Activity #42

Subject Area:

Art/Music

SUPPORTING THE ARTS

Capsule Activity Description:

Students investigate and evaluate careers that involve art or music by interviewing individuals in those occupations.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with employees in art and music related occupations
approximate preparation time: ½-1 hour
approximate class time: 2-3 classes

Art/Music Area Objective:

To relate artistic creation, playing an instrument, and composing music or other fine arts skills and tasks; to place artistic creation and performance in the context of the delivery of art to the public and maintenance of artists.

ACTIVITY

This activity is designed to assist art and music students who might like to develop a career around their interests and talents in art or music but may not be interested or talented enough to become a professional or full-time artist or musician. (Activity #41 is designed for students who aspire to professional status.) The activity centers around interviews with people who have made careers in art and music related fields. An art or music teacher can appropriately integrate the exercise into his or her course in at least two ways:

1. The activity fits in well with a study of the performing arts, where issues of public subsidies for art, methods of bringing "culture" to the public, and other aspects of the delivery of art forms to the public are treated in the regular course of study.

2. The activity can also be introduced more informally whenever students raise questions about or have problems with servicing their musical instruments, purchasing instruments or art supplies, or talk about a public musical performance or art exhibit they attended.

The activity can be conducted as an individual project, small group project, or a class small group exercise. The latter approach is followed here.

The teacher begins by asking the class to identify some of the services needed by musicians and artists in order to pursue a **professional** career and from that develops a list of music and art related occupations. The teacher also asks students to identify jobs involved in making artistic creations and musical events to the public. Examples of jobs in both categories that the teacher can place on the chalkboard include:

- art and music suppliers
- museum staff–curators, tour guides, purchasers
- promoters of musicians and artists, impresarios
- disk jockeys
- music programmers for radio stations
- publishers
- art auctioneers
- manufacturers of musical instruments and accessories
- music librarians
- art librarians
- art restorers
- piano tuners

Once a list has been developed, the class breaks into small groups, and each group selects three occupations that interest it. The groups then research the jobs they have selected by identifying appropriate employees in these professions and interviewing them. Methods for identifying cooperative interviewees include:

- consulting the teacher and guidance counselor(s) for suggestions;
- perusing the Yellow Pages for appropriate retail stores and calling up for an appointment;
- walking into appropriate retail and wholesale stores and politely explaining the interview's purposes and requesting an interview; and
- obtaining names of stores from the students' own private music and art teachers.

Each group then develops an interview guide comprised of the major questions it wants answered. A sample interview guide follows.

SAMPLE INTERVIEW GUIDE

Job Title: _____

Place of Employment: _____

1. Why did you take this job?
2. What is your background in music (art)?
3. What special education and/or training, if any, did you need for this job?
4. Was your musical (artistic) background helpful or essential in order to get and perform well at this job?
5. Do you (continue to) currently play an instrument (paint, etc.)?
6. What, exactly, does your job entail?
7. What do you like about your job?
8. What do you dislike about your job?
9. Would you recommend the career to someone who is interested in music (art) but is not qualified or interested in being a professional musician (artist)?
10. Is this a useful job for someone who wants to combine a career as a professional musician (artist) with another job?

After the interviews have been conducted, each group returns and writes a profile of each job researched. (This can also be done as homework or as a class exercise.)

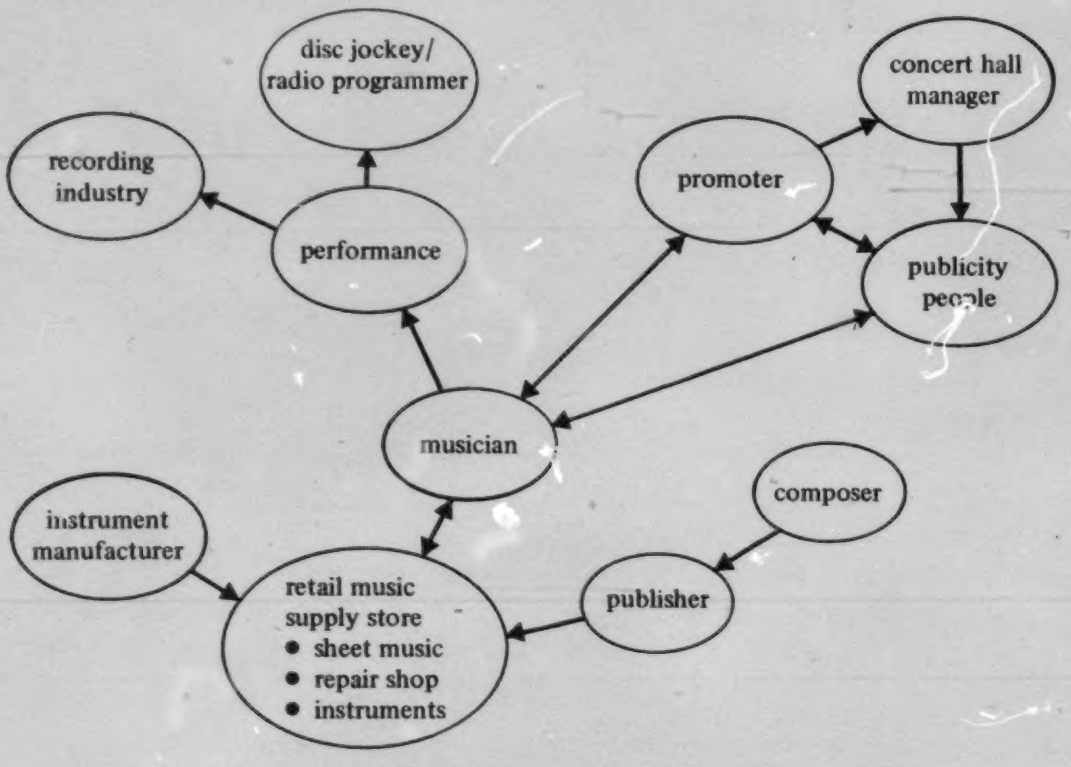
The profiles are shared with and commented upon by the rest of the class and then gathered together into a career information booklet. The booklet can then be duplicated and made available in the library, career information center, and/or guidance office. Future classes can add to the list of profiles and update existing ones.

Follow-up discussion can also be held on one or more of the following issues:

1. What are the attractive and unattractive aspects of each job researched?
2. Is it possible and/or desirable to combine a career as a professional musician or artist with a second job?
3. How is art creation and musical composition and performance related to the rest of society, including the market place and public entertainment?
4. Is there discrimination in any of the jobs researched against men or women? If so, why and how should someone considering entering that occupation respond to that problem?
5. Is it possible to develop a flow chart that relates artistic creation to the structure of society? Is the example on the following page accurage and useful?

Useful Prior and Subsequent Activities:

- Class can discuss what activities which they are currently doing in their classes may be useful for entering or performing well in one of the art-related occupations researched.
- Copies of the booklet can be sent to the local musicians' union or art association for their comments.
- Employment Security Office staff members or employment counselors can be invited to class to answer questions and react to the booklet.
- Class can role play one or more of the occupations researched, with different students taking the part of the employee and other students taking the parts of musicians and artists who must relate to the employee.



Resources: Students can read two autobiographies by art aficionados:

- Daniel-Henry Kahnweiller and Francis Cremieux, **My Galleries and Painters** (Viking Press: New York).
- Bernard Berenson, **Rumor and Reflection** (Simon and Schuster: New York).

Two resource books may be helpful:

- **American Art Directory,** 1974. Edited by the Jacques Cattell Press for the American Federation of Arts (R. R. Boulder Co.: New York). Contents: Art organizations (U.S. national and regional organizations; Canadian art organizations).
- **The Official Museum Directory** by the American Association of Museums and National Register Publishing Co. (The American Association of Museums: Washington, D.C. and National Register Publishing Co.: Skokie, Illinois).

Information about museums can be obtained from:

- American Association of Museums
  2233 Wisconsin Avenue NW
  Washington, D.C. 20008
- Association of Art Museum Directors
  Box 620 Lenox Hill Post Office
  New York, New York 10021

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Trucker
- Taxi Cab Driver
- Bus Driver
- Chauffeur
- Mover

DRIVER EDUCATION RELEVANCE:

- Driving Skills
- Truck Driving Skills
- Automobile Safety

Activity #43

Subject Area:

Driver Education

WORKING BEHIND THE WHEEL

Capsule Activity Description:

Students investigate, through research and interviews, careers which use the driving skills that they are learning.

Teaching Prerequisites:

materials needed: none
contacts with community: interview with professional drivers
approximate preparation time: ½-1 hour
approximate class time: 1-2 classes

Driver Education Objective:

To learn how to drive defensively, react in emergency situations, and be aware of the mechanical limitations and possibilities of the automobile as they affect safe driving.

ACTIVITY

The career education purpose of this activity is for driver education students to become aware of career opportunities "behind the wheel" and of the advantages and disadvantages.

The activity can be easily integrated into a driver education course at several points, including: awareness of the other vehicles and drivers; defensive driving; special driving skills; and awareness of how the mechanics of vehicles affect safety.

"Brainstorming" by the class will result in a long list of driving jobs. Some of these include truck drivers, bus drivers, cabdrivers, chauffeurs, house and furniture movers, heavy equipment operation, farm vehicle operation, and snow plow drivers and drivers of other maintenance vehicles.

Then, each student, or teams of students if the class is large, invetigates one of the driving jobs. There are three steps to this activity: library research, interviewing drivers, and evaluation and sharing of

information. Guest speakers can substitute for interviews if the latter are not practicable, or the activity can be conducted as individual student projects rather than as a small group exercise.

Step One—Research

Using materials available in the library, the career information center, or the guidance office, students write a short background report on the tasks and job conditions of the career under study.

Step Two—Interview

Each student interviews three to five people who earn their living in the specific driving job. Unions will usually be very helpful if you or your students do not have personal contacts. The union contact can be made, either by you, by the students, or by students' parents by using the phone book.

Each group develops its own interview guide, as in the example below.

Job title: _____

Tasks performed: _____

Salary range: _____

Hours of shifts: _____

Benefits: _____

Education or skill requirements: _____

Opportunities for advancement: _____

Most frequent safety problems encountered: _____

_____

Most important driving skills used: _____

_____

How much knowledge of the mechanics of the automobile/truck is necessary? _____

_____

Is there discrimination against women or minority persons in your job? _____

Why was the job first chosen? _____

Advantages of the job: _____

_____

Disadvantages of the job: _____

_____

What are some of the emotional satisfactions you got out of driving a big truck (taxi, etc.)? _____

_____

Any other important information? _____

_____

When the interviews are completed, students compile the results into a job profile by drawing a composite picture from all the interviews. For example, if there are four students in the group and they interview three taxi drivers each, they then have twelve pieces of data. For "salary ranges" or "hours worked," an average figure is developed. For safety problems, a list of all problems mentioned along with the number of times each is mentioned is provided. This profile should be added to the previously written reports done in the library.

Step Three—Reporting

The reports are presented to the whole class and then compiled into a booklet, "Careers Behind the Wheel." The booklet can be added to or edited by future classes.

Follow-up class or small group discussion can be held around one or more of the following issues.

- What driving habits do professional truck, bus, taxi, etc. drivers engage in that require the everyday motorist to drive defensively if he or she wants to avoid an accident?
- How can the average motorist drive defensively so as not to get into an accident with trucks, buses, or taxis?
- What important driving skills do people who must drive as a living develop in order to drive safely? What special "tricks" have they learned for staying out of accidents? Are any of these skills or "tricks" ones the average motorist should and can develop and use?
- What is it like, emotionally, to drive for a living? Is it relaxing? Upsetting?
- Is there discrimination against certain people in any of the occupations studied? For example, is there discrimination against women who want to become truck drivers or taxi drivers? If there is, what is the justification for it and how can it be eliminated or reduced?
- What are some of the emotional reasons some people like to drive for a living? Are there special needs or problems that driving a huge truck, for example, satisfies? For example, does it enable people to express a sense of power? You may need to be tactful in this discussion in order not to offend students whose parents are employed in the transportation field.

Useful Prior and Subsequent Activities:

A union or management leader can be invited to visit the class to react to the booklet or to discuss further driving careers.

Resources:

- State, city, or county government departments of transportation agency responsible for licensing truck drivers, taxi cab drivers, etc.
- Taxicab, Bus, Funeral Drivers and Chauffeurs Union
  (Eastern Conference of Teamster's Union)
  4641 Montgomery Avenue
  Bethesda, Maryland 20014
  or local affiliate

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Auto Mechanic
- Gas Station Attendant
- Toll Taker
- Vehicle Test Driver
- Safety Expert and Analyst

DRIVER EDUCATION RELEVANCE:

- Automobile Safety
- Automobile Servicing

Activity #44

Subject Area:

Driver Education

WORKING AT DRIVING SAFELY

Capsule Activity Description:

Students examine careers that influence the condition of their automobiles and the safety of their driving.

Teaching Prerequisites:

materials needed: none
contacts with community: observation of automotive related occupations
approximate preparation time: ½-1 hour
approximate class time: 1-2 classes

Driver Education Objectives:

to make students aware of the people who service automobiles and who thereby influence driving safety; to be aware of the relationship between automobile maintenance and repair and automobile safety; and to understand the relationship between highway construction and maintenance and driving safety.

ACTIVITY

The purpose of this activity is for the students of driver education to become aware of and to observe occupations that influence driving safety.

This activity can be easily integrated into an analysis of the relationship between automobile maintenance and safety and highway maintenance and construction and safe driving, including the problem of highway "booby traps."

The class begins by "brainstorming" a list of occupations that support the automobile or that the driver meets in normal driving situations. Examples include auto mechanic, gas station attendant, toll taker on highway or bridge, highway engineer, automobile manufacturer, highway landscaper, and highway maintenance workers. Depending on class size, and the size of the job list, this activity can be done by individual students or small teams of two to four students each. Each student or group chooses a job and then interviews, observes and evaluates members of each occupation. Guest

speakers can substitute for the interviews if the latter are not practicable. Individual students can make the activity into a project, rather than a small group exercise.

Interview

Students or groups of students interview three people performing one automobile related job. Since the jobs under consideration are held by people in the local community, your students, or their parents may know cooperative people and/or can easily make personal contacts with responsive people in these occupations. A sample interview format follows which students can replicate in developing their own interview guide.

Job title: _____

Job tasks: _____

How does this job aid the motorist in driving? _____

_____

How does this job affect the safety of the motorist? _____

_____

Hours and shifts worked: _____

Salary range and benefits: _____

Education and/or skills required: _____

Why was the job first chosen? _____

Other interesting information? _____

_____

The more people interviewed, the more accurate a picture of the job students will obtain. Students develop a job profile when the interviews are completed. This profile is basically a simple compendium or composite of the interview sheets, averaging those things that can be averaged and listing those items that should be noted.

Observation

Students observe the work situation. Volunteer work would be even better. However, care must be taken not to break Child Labor Laws or to infringe on union regulations. Students should consult the company legal staff on these issues. The length of time for the observation can vary from job to job, but should be long enough for students to get a "feel" for the job.

During observation, students use a check list they develop themselves, such as the following:

Tasks done to aid in the care and operation of the automobile: _____

_____

_____

Tasks done to help in the safe operation of the vehicles: _____

_____

_____

Special skills used in the job: _____

_____

Speed or dexterity needed: _____

_____

Inter-personal contact: _____

_____

Strong assault on the senses (lights, smells. . .) _____

_____

Physical requirements (stamina, strength. . .) _____

_____

As was done after the interviews, when more than one student engages in observation or if more than one observation was made by the same student, a composite report is written. These reports can be shared first within the small group and then with the class. Identifying the common elements in more than one report and the conflicts among reports can lead to fruitful discussion.

Useful Prior and Subsequent Activities

During driving practice, as various driver support occupations are encountered, reactions toward people employed in these occupations and the services they perform and fail to perform on behalf of motorists can be discussed.

Resources: • Local department of motor vehicles.

Comments from Teachers and Students After Using This Activity:

OCCUPATIONAL FOCUS:

- Translator

FOREIGN LANGUAGE RELEVANCE:

- Conversation

Activity #45

Subject Area:

Foreign Languages

TRANSLATING THE PROBLEM

Capsule Activity Description:

Students simulate a series of encounters between foreign language speaking persons and social service agency employees.

Teaching Prerequisites:

materials needed: none
contacts with community: visit to social service agency (optional)
approximate preparation time: ½-1 hour
approximate class time: ½-3 classes

Foreign Language Objectives:

to practice and develop conversational speaking ability

ACTIVITY

The purpose of this activity is to give students experience using the foreign language under study and to simulate the role of a translator.

The activity has two options, either of which can be conducted independently of the other. You can also use both parts. In the first part, students interview staff at one or more social service agencies that must deal on occasion or regularly with foreign speaking clients. (As a substitute for interviews, appropriate agency staff can be invited to talk to the class.) In the second part, students develop role profiles for foreign language speaking people and social service agency staff and then act out using the foreign language the problems described. Follow-up discussion is then held on both the accuracy of the grammar and pronunciation of the spoken parts and on the tasks and skills required by a professional translator.

Activity #45

You can integrate this activity into your regular foreign language lesson plans at almost any time, since you probably deal with conversational skills continuously. In addition, the activity would be appropriate after students have engaged in a lengthy translation assignment.

Although the description below treats the activity as a small group exercise, students can also conduct it as individual project assignments.

Option One—Interviews

Students break into small groups and are told to identify occasions when a translator's services might be needed, either in their own community or in a typical large city. You can provide assistance by mentioning the following situations which require translators:

- social worker interviewing welfare client;
- police questioning resident who has witnessed or is accused of a crime;
- resident seeking help from police officer or fire fighter;
- hospital staff communicating with a patient, especially in the emergency ward;
- foreigners touring America, either as tourists, diplomats or businessmen or businesswomen;
- plaintiff, defendant, or witness in court;
- resident applying for a permit, license, or engaging in some related administrative contact with a government agency;
- unemployed person seeking a job in an employment office.

Each group, with your assistance, then arranges for a field trip to one or more of the following institutions where the use of translators is occasionally or regularly required:

- social work agency
- police station
- fire station
- hospital
- tourist agency
- embassy/consulate
- court
- government licensing and administrative agencies (e.g., passport/visa office; department of hunting and fishing; building code department)
- employment office or agency.

Before visiting the site(s), the groups must determine in advance whether in fact these agencies do require the services of translators and whether they are interested in promoting student interviews. The groups can learn this information, with your assistance again, by telephoning the agency and/or visiting it to set up the field trip and identify the people to be interviewed (such as translators, agency supervisors, and foreign speaking clients).

Having made these arrangements, each group develops a brief interview guide listing the questions it wants to ask, such as:

1. How often are your translation services required?
2. How much knowledge of technical language (e.g., medical terms) must you know?

3. What motivated you to enter this field?
4. Are you a full-time translator or do you have other jobs?
5. What training did you need to enter the field?
6. What would happen in the situations in which you provide translations if you were not available?
7. How many foreign languages do you speak and which ones? How important is it that a translator be fluent in more than one foreign tongue?

After conducting the interviews, the groups share their findings with the class and discuss and compare the answers to the above questions and others they posed.

Note: Instead of interviews, one or more of the individuals to be interviewed can be invited to class to describe the translator's role and to answer questions.

Option Two—Role Plays

The class in this option, which can also follow the interviews suggested above in Option One, conducts a series of role plays in which students take the parts of foreign language speaking persons, agency staff who must communicate with them, and translators. The role profiles for the exercise are developed by the students themselves, either individually or in small groups. A sample set of role profiles for one role play follows.

Role Profile A—Translator

You are a professional translator who works part-time for the local city hospital when they have patients either in the emergency ward or hospitalized. You translate to the doctors and nurses what foreign language patients want to communicate and, in turn, tell the patients the doctors' instructions and explanations. You have just been called into the emergency ward by a doctor who is examining a foreign language patient who is apparently having difficulty explaining to the doctor what is wrong with him or her. You walk over to the patient and say, in his or her language, "I am a translator and will tell the doctor for you what your problem is. What seems to be your illness."

Role Profile B—Doctor

You are a doctor working in the emergency ward of a big city hospital. Once in a while patients come in who speak only a foreign language. When this happens, you call for the services of a translator who works in the hospital. You have just been trying to examine an emergency patient who doesn't speak English, so you have called for a translator. The translator has just walked in. You introduce him or her to the patient and wait to hear what the patient's problem is.

Role Profile C—Patient

You are a member of the city's medium size foreign language speaking community and speak almost no English. However, this evening you began to feel very sick so you went to the city hospital emergency room. You were seen by a doctor, but had trouble explaining to her what the problem is. You have a sharp pain in the lower right-hand side of your stomach and feel like throwing up. You think it might be because you had a very heavy dinner and simply ate too much, but you're not sure, even though you've had a similar problem in the past—overeating and getting a very bad stomach ache. But those earlier times you never felt like throwing up. This is what makes you think it's not just indigestion. A new person has just walked into the emergency room and is coming over to you and your doctor. You wonder who he or she is.

Using this model, the class develops several role play situations with accompanying role profiles. For advanced students, these role profiles can be written in the foreign language.

Activity #45

Different students volunteer or are assigned to enact the role plays. Observing students are assigned to make notes on errors of grammar and pronunciation the participants make.

You may need to exercise sensitivity and caution with some of the role plays. For example, students may feel uncomfortable playing the part of welfare workers or foreign speaking clients if these students have parents who are on welfare or if they themselves are minority, foreign language students. You can either avoid certain role play situations, such as the welfare-client one, or be very careful about whom you assign sensitive roles to. On the other hand, students can gain personal insight into some of their concerns if they are given the opportunity to role play people whom they, as foreign language students or as children of unemployed parents, must confront in their own lives.

After each role play, observing students evaluate the language skills displayed by the "translator" and "foreign language speaking person" and then discuss further one or more of the following issues:

1. What skills does a translator need to have to be effective?
2. What other translation tasks might a professional translator be called upon to perform?
   - translate books and articles for publishers
   - translate books and articles for scholars and government officials
   - act as a tour guide for foreign tourists or for American tourists traveling in foreign countries
   - act as translators for government officials when they visit foreign countries
3. What supplementary jobs can a translator take if he or she cannot support him/herself full time through translation work?

Useful Prior and Subsequent Activities

- Foreign speaking person can talk to the class about problems he/she has encountered in communicating with English speaking people and on role of translator.
- Bi-lingual or native speaking social worker, police officer, poverty lawyer, embassy/consulate staff, etc. can be invited to class to evaluate one or more of the role plays.
- Students can write "Dear Abby" or similar letters requesting information to newspapers and government officials and agencies in the foreign language. Other students can play the role of newspaper editor or government official and answer the letters in the foreign language.

Resources: See following Activity, #46.

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Business Executive or Employee
- Translator
- Tour Guide
- Government Foreign Service

FOREIGN LANGUAGE RELEVANCE:

- Writing
- Reading
- Conversation

Activity #46

Subject Area:

Foreign Languages

WORKING IN A FOREIGN LANGUAGE

Capsule Activity Description:

Students interview or write to multi-national companies and organizations to learn how foreign language skills are used by their employees.

Teaching Prerequisites:

materials needed: none
contacts with community: interview a worker who uses a foreign language as part of her/his job (optional)
approximate preparation time: 1 hour
approximate class time: 1-2 classes

Foreign Language Objectives:

to motivate students by means of practical reasons to study foreign languages.

ACTIVITY

This activity helps students of foreign languages become aware of career opportunities in which their foreign language skills will be of assistance.

The group of students envisioned in this activity is the first level of foreign language study (although it can be adapted for use with more advanced students). This activity provides an opportunity to face the frequent problem of motivation, "Why should I study French (or Spanish or Italian)?" Since the first year of a language also includes many hours of memorization, the activity offers a useful change of pace. For more advanced students, all correspondence and interviews and reports can be written in the foreign language. The activity, while described as a small group exercise, can also be conducted as an individual student project.

Begin by preparing a list of career situations that use foreign language skills. This list could include

travel agencies, airlines, social service agencies, multi-national companies, consulate offices, and other situations that you and your students can identify.

In addition to the State Department, people with language skills are hired for such agencies as the U.S. Information Agency and the Office of Economic Opportunity. Language skills often are needed for local government jobs in areas with large numbers of minority groups or immigrants; this includes bilingual teachers. Foreign languages are also used in the following fields: Education, including research, administration and overseas schools; Law, including legal aid and international law; Library science, including archives and area studies specialists; Media, including journalism, film companies and publishing; Science, including research and matters of international cooperation; Travel and tourism, including hotels and transportation.

Ideally, the activity should have person to person contact with people who use the language (and, for advanced students, in the foreign language). Whenever possible a local company or person should be consulted. If your school is in a community where personal contacts with people in these places are not available, you can easily adapt the activity so that all the work is done through the mails.

Once the list is developed, divide the class into small groups. Each group investigates a career situation or company. Each group arranges for an interview with an officer of the organization or company by contacting the personnel or public relations office. When personal contacts are not possible, students can write to the personnel or information officer of the organization. Students seek to learn:

- what the organization/company does;
- its use of foreign languages;
- a list of job titles that require knowledge of foreign languages; and
- a list of job titles in which knowledge of the foreign language would be helpful.

A report to the class follows the visit to the organization/company. For advanced classes, the report can be presented in the foreign language under study.

Interviewing someone doing the job can be an additional, optional activity. Each member of the group chooses one of the job titles and arranges for an interview. Arrangements can be made through the efforts of the first person contacted in the previous part of the activity, either "in person" or by mail. During the interview, the following topics should be the minimum covered:

- job title and job tasks performed
- salary range, hours, benefits
- educational or skill requirements of the job
- foreign language skills required
- how the foreign language skills are used in the job
- amount of travel
- advantages of the job
- disadvantages of the job.

A report of the interviews can be prepared and presented first to the group and then to the class.

A career booklet "Foreign Language Careers" can also be another result of the activity. The student reports can be gathered together, possibly from different foreign language courses, and made available to inform other students of career possibilities and to encourage other students to study foreign languages.

Useful Prior and Subsequent Activities:

- One of the persons interviewed can be asked to review the booklet and comment.
- A member of one of the organizations or agencies can be invited to the class to explain the career possibilities using the foreign language.

Resources:

- Modern Language Association
  62 Fifth Avenue
  New York, N.Y. 10011
- Interpreting and Translating Services Office
  United Nations
  New York, N.Y. 10017
- Language Service Division
  U.S. Department of State
  Washington, D.C. 20520

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Medical Paraprofessional
- Nurse
- Health Inspector
- Industrial Worker
- Farmer

HEALTH EDUCATION RELEVANCE:

- First Aid
- Accident Prevention
- Industrial Health Issues

Activity #47

Subject Area:

Health Education

FIRST AID ON THE JOB

Capsule Activity Description:

Students visit industries and/or farms to research occupational injuries and first aid techniques used to treat them.

Teaching Prerequisites:

materials needed: first aid supplies
contacts with community: visit to industrial plant(s) and/or farm(s); interviews with employees and safety officers
approximate preparation time: ½-1 hour
approximate class time: 2-4 classes

Health Education Objectives:

to learn and practice first aid techniques related to industrial and/or farming accidents; to be able to identify ways of preventing industrial and/or farming accidents.

ACTIVITY

The purpose of this activity is to integrate into the first aid unit of a health course a study of working conditions connected with occupational health and safety. The activity has two major parts: a field trip with interviews to one or more industrial plants and/or farms, and follow-up discussions and role-plays on the results. (If interviews are impractical, appropriate industry/farm representatives still can come to the school to talk with the classes.) The activity can be appropriately integrated into a health course whenever first aid or occupational health and safety are discussed. In addition, the activity could be used whenever a school staff member is injured on the job, since such a visible and near-by example of the problem of occupational health and safety and need for first aid will provide a good introduction and stimulus for the activity.

Activity #47

Part One—Field Work

How this part of the activity is organized depends on the local occupational situation. The number and variety of industrial and farming sites will influence which of the following options teachers and students will want to implement. Whatever option is chosen, however, the same objective is relevant for all of them: to gather a list of possible accidents that workers and/or farmers may have as part of their occupation and to identify how injured employees are treated and what measures are taken to prevent accidents on the job.

Option One: If there is a variety of industrial plants and/or farms in the local area, the class is divided into small groups of two to four students. Each group investigates a different industrial or farm site. Where possible, different groups should select different types of industrial and farm sites to visit (e.g., large vs. small; automated vs. handicraft; union dominated vs. management controlled; public vs. private; accident prone vs. accident free). With the help of the teacher, each group contacts and identifies officials and employees at its site that it should interview. Groups then draw up a brief interview guide that contains questions on four related issues:

1. What accidents occur not infrequently on the job;
2. What first aid is provided when they occur;
3. What prevention efforts are mounted to avoid these accidents; and
4. What is the nature of the Safety Officer's job.

When each group visits its site, it can conduct the interviews as a group or split up to talk to different people. Students may find the latter solo approach less comfortable, but it enables them to talk to more people. While on site, students collect available company literature on health and safety issues.

Option Two: If there is only one industrial plant or farm that is convenient, students as a class visit that one site. For this option the class also develops an interview guide. Once at the site, the class splits up into small groups (designated before the field trip) and interviews different people simultaneously. Once again, students while on site collect relevant company literature.

Option Three: If a field trip is impossible, the class invites one or more individuals with knowledge of occupational safety to speak to the class and respond to questions about first aid and about the nature of their occupation. Before the speaker(s) arrive, the class develops a series of questions it wants answered around the four topics listed in Option One. Appropriate speakers include:

- Industry Safety Officer(s)
- Industry Medical Officer
- Industry Nurse
- Federal officials from the Occupational Safety and Health Administration (Department of Health, Education and Welfare)
- Union officials
- Employees and/or farmers known to have been injured on the job
- Federal officials from the Department of Agriculture Regional or State office
- Insurance company medical officer

Speakers are asked to bring relevant literature to the class when they come.

In making the arrangements for field trips or guest speakers, the teacher and/or students consult with

the school guidance department to identify industries and/or farms which have been cooperative in the past on school activities and which are likely to be responsive to the need for student interviews.

Part Two—Follow-up Options

There are at least three follow-up activities the class can engage in after the field trip(s) or guest lectures.

Option One: For classes that engaged in options one or two, the small groups can report their findings to the entire class and compare results and try to explain discrepancies. For example, did employees give a different version of the company's or farm's safety measures than management did? If so, why and who is telling the truth? Did different industries or farms claim to use different first aid remedies for the same accident? If so, which remedy is best, or are both appropriate?

Option Two: General discussion, either in small groups or as a class, can be held on the four topics the interview guide treated, namely:

1. the nature and frequency of on-the-job accidents;
2. first aid measures taken when these accidents occur;
3. preventive steps taken to avoid accidents; and
4. the duties and training involved in being an industry or farm Safety Officer, medical officer, nurse, or health inspector.

If more than one industry or farm was visited or more than one guest speaker lectured, class can focus its discussion on discrepancies among industries, farms, or speakers in terms of the above four issues. If desired, additional steps can be taken to resolve such differences, such as writing to allegedly authoritative sources, like the government, for additional information. (See Resources section at the end of activity for suggested sources.)

Option Three: Using the regular classroom resources in first aid, and perhaps with the technical assistance of the school nurse, students can prepare and simulate the proper first aid response to different accidents. Small groups of students, possibly with a team of two students each, can choose an accident and role play for the class, after practice by themselves, the first aid measures that should be employed. Examples of injuries or accidents that can be role played include:

- minor bleeding
- profuse bleeding
- heat prostration
- frostbite
- broken bones
- sprains
- pulled muscles
- spine injuries
- vomiting
- migraine
- pinched nerve
- limb crushed by a heavy object
- poisoning
- skin irritation
- foreign matter in the eye, nose or throat

- choking
- internal injuries

Another role play approach is for the teacher to assign role profiles to students who must then, without practice, act them out immediately. This approach is more realistic in terms of replicating the actual mental and physical quickness someone is likely to have to exhibit during an actual medical emergency. Sample role profiles for a first aid "dispenser" and the injured "employee" follow.

SAMPLE INJURED EMPLOYEE ROLE PROFILE

You work on a lathe in the Lumpy Lanolin Lubricating Company (known locally as "The Three L's"). You have just put a deep cut in your arm between the elbow and the shoulder. A co-worker has just rushed you to the first aid station where the first aid dispenser is looking anxiously at all the blood you're trailing into his/her office. You say to the first aid person, "Do something quick! I can't stop bleeding!"

SAMPLE CO-WORKER ROLE PROFILE

You work on a lathe in the Lumpy Lanolin Lubricating Company. The worker right next to you has just put a deep cut in his/her arm above the elbow. You rushed over and have just helped him/her into the first aid station where the first aid person is looking anxiously at the blood all over the floor. You haven't even noticed the blood all over you in your nervousness.

SAMPLE FIRST AID PERSON ROLE PROFILE

You are the first aid dispenser in the Lumpy Lanolin Lubricating Company. Many of the workers here use dangerous equipment, including high speed lathes. In fact, you have just looked up from reading the January issue of **Frostbite in the Factory** and there is a worker holding another worker who is bleeding terribly from his left arm above the elbow. What do you do?

Follow-up discussion after the role plays can center on what first aid techniques were used, whether they were appropriate and the best, and how the accident could be prevented or reduced in the future.

Useful Prior and Subsequent Activities:

- Class can study first aid techniques.
- Class can study the role of medical paraprofessional, nurse, health inspector, etc.
- The people interviewed and/or the guest speakers can be invited to class to evaluate the first aid role plays.
- Class can study first aid techniques.
- Class can study occupational health (as opposed to emergency injury/accident) hazards, such as lung disease, cancer, deafness, and blindness.
- Class can study industrial pollution and its effects on the health of employees and the community in general.

Resources: Useful and free or inexpensive pamphlets and flyers can be obtained from the following sources:

- ANA-NLA Committee on Nursing Careers
  American Nurses' Association
  10 Columbus Circle
  New York, N.Y. 10019
- National Federation of Licensed Practical Nurses, Inc.
  250 West 57th Street
  New York, N.Y. 10019
- Assistant Administrator for Information
  Health Services and Mental Health Administration
  5600 Fishers Lane
  Rockville, Maryland 20285
- American Medical Association
  535 North Dearborn Street
  Chicago, Illinois 60610
- Local Red Cross Chapter or
  American National Red Cross
  National Headquarters
  17th and D Streets, N.W.
  Washington, D.C. 20006
- State and local health agencies
  (consult phone book under state and/or city)
- Local industries may have literature, as well as the national offices of major companies like Ford, General Motors, and U.S. Steel.

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Nurse's Aide
- Medical Paraprofessional
- Pharmacist
- Laboratory Technician
- Dietitian

HEALTH EDUCATION RELEVANCE:

- Health Care Delivery
- Accident Prevention
- First Aid
- Hygiene

Activity #48

Subject Area:

Health Education

HEALTH SUPPORTS

Capsule Activity Description:

Students explore medical support services in their community by interviewing appropriate professionals in the field.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with medical support personnel at one or more health care facilities
approximate preparation time: ½-1 hour
approximate class time: 2-3 classes

Health Education Objectives:

to learn about accident prevention, first aid, and hygiene; to understand that the quality of personal medical and health care depends not only on the quality of doctors and nurses but also on the quality of the health care support staff; to learn how to use the health care delivery system to improve or maintain one's personal health.

ACTIVITY

The purpose of this activity is to explore the health care delivery system and the people who support the system in careers that are not directly medical. The activity involves students in interviewing appropriate employees of health care facilities and engaging in follow-up discussions of what they learned. (If interviews are not feasible, the employees can be invited to talk to the class.)

You can integrate this activity into your health education lesson plans at several appropriate points. More basically, you can implement the activity whenever you treat first aid, accident prevention or hygiene, since students are going to learn these areas merely by interviewing health care support staff about the tasks these professionals engage in as part of their regular occupation. You can also use the activity, clearly, when you discuss health care support staff—who they are and what they do. Finally, the activity can be introduced very productively when students are studying the practical issue of how

to get the best possible health care, since students often fail to realize that getting high quality care depends not only on good nurses and doctors but also on good nurse's aides, laboratory technicians, and other individuals whose work at first blush may not seem to affect the quality of health care. By making students aware of this issue, you can go on to discuss how students can attempt to ensure that they receive quality care from these auxiliary health care personnel.

Although the activity can be conducted as an individual project, the option described below is for small groups.

Divide the class into small groups of students. Each group is responsible for interviewing the health care support staff at one local health care facility. Possible facilities and relevant support staff are listed below:

- hospitals: nurse's aide; laboratory technician; dietitian; pharmacist; paraprofessional
- clinics: same occupations
- pharmacies: pharmacists
- nursing homes: nurse's aide; dietitian, paraprofessional
- mental hospitals: nurse's aide; pharmacist
- dental offices: dental technician or assistant
- ambulance companies: ambulance driver

Once each group has selected a facility to visit, it develops a list of questions it would like answered. A sample interview guide follows.

SAMPLE INTERVIEW GUIDE

Name _____

Title or Position: _____

1. What exactly do you do in your job?
2. What motivated you to enter the job?
3. What training did you need to enter it?
4. How much knowledge of medicine or health care is necessary to perform your job well?
5. What is the relationship between what you do in your job to the rest of the facility in which you work?
6. What do you like about your job?
7. What don't you like about it?
8. Did you encounter any discrimination as a man or woman entering the job or working in it? If so, how have you responded to that discrimination?
9. Is there anything you would like to add about your job that might be useful to us?

After developing the interview guide, each group, with your assistance, contacts a facility and individuals within it who are interested in being interviewed. Students can make such contacts by:

- working through someone in the class or school, one of whose parents or relatives works in a health care facility;

- using the school guidance department or school nurse, doctor, or physical therapist to identify possible facilities and people;
- contacting in larger medical facilities the Information Officer, Public Relations or Personnel Office for permission to conduct interviews and names of staff to talk with; and
- contacting in small facilities the director or owner.

Each group then divides up the interviews among the members or conducts them as a group.

After conducting the interviews, each group meets again briefly to compare notes (particularly if different members of a group interview different people) and decide who will report their results to the class. After each group has presented its findings to the class, the following discussions can be held:

1. What specifically was learned about:
   - accident prevention?
   - first aid?
   - hygiene?
2. In each of the facilities visited, who besides the doctors and nurses had an effect on the quality of the health care clients receive?
3. What are some of the ways in which health care support staff can affect the quality of the health care clients receive? For example:
   - the accuracy with which pharmacists fill prescriptions;
   - the accuracy and speed with which laboratory technicians perform lab tests;
   - the sensitivity with which nurse's aides care for mental patients;
   - the appropriateness for special types of patients' menus dietitians develop (e.g., for those patients on a salt-free diet).
4. What can the clients do to obtain the best possible health care from these support personnel?
5. What career advantages and disadvantages are there in being a health care facility dietitian, paraprofessional, pharmacist, lab technician, or nurse's aide?
6. Do some people want to become health care professionals because the jobs satisfy certain needs—like wanting to care for people, or wanting the excitement of facing "life-or-death" situations, or wanting to learn about medicine in order to be able to keep oneself from getting sick? You will want to be tactful in this discussion in order not to offend students whose parents work in the health care field.

One of the individuals interviewed can be invited to class to critique the students' conclusions.

Students can volunteer to work in a health care facility and report to the class on the accuracy of its conclusions.

Useful Prior and Subsequent Activities:

- Students can engage in Activity #47 on occupational accidents.
- Students can engage in volunteer work at one or more of the facilities studied.
- Students can talk with their family physician on the phone, or the next time they visit him or her and ask how the doctor utilizes and is dependent on the services of health care support staff (e.g., for lab tests and lab reports).

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Resources: Students can read one or more of the following books which discuss the functions of nurse's aides, paraprofessionals, and laboratory technicians:

- **I Never Promised You a Rose Garden,**
  Hannah Green,
  Signet Books (New York: 1964).
  Paperback. Useful on nurse's aides in a mental hospital.
- **The Snake Pit,**
  Mary Jane Ward
  Signet Books (New York: 1946).
  Paperback. Again, useful on nurse's aides in a mental hospital.
- **The Mental Hospital,**
  Alfred Stanton and Morris Schwartz,
  Basic Books (New York: 1954)
  Hardbound. Contains chapter on "Roles of Doctor, Nurse, and Aide."

The following three books contain intermittent but relevant sections on laboratory technicians and nurse's aides:

- **The Making of a Surgeon,**
  William A. Nolen,
  Pocket Books (New York: 1970)
  Paperback.
- **A Surgeon's World,**
  William A. Nolen,
  Fawcett Books (New York: 1972).
  Paperback.
- **Five Patients,**
  Michael Crichton,
  Bantam Books (New York: 1970).
  Paperback.

Students and teachers can also write for further information to:

- The American Medical Association
  535 North Dearborn Street
  Chicago, Illinois 60610
- Assistant Administrator for Information
  Health Services and Mental Health Administration
  5600 Fishers Lane
  Rockville, Maryland 20285
- American Nursing Home Association
  1200 15th Street, N.W.
  Washington, D.C. 20025
- American Hospital Association
  840 North Lake Shore Drive
  Chicago, Illinois 60611

- American Dental Association
  211 East Chicago Avenue
  Chicago, Illinois 60611
- American Dietetic Association
  620 North Michigan Avenue
  Chicago, Illinois 60611
- American Society of Medical Technologists
  Suite 1600, Herman Professional Building
  Houston, Texas 77025
- State departments of health

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Athlete
- Physical Education Trainer
- Trainer
- Coach
- Physical Therapist

PHYSICAL EDUCATION RELEVANCE:

- Physical health
- Athletic skills

Activity #49

Subject Area:

Physical Education

WORKING TO STAY IN SHAPE

Capsule Activity Description:

Students interview people whose careers are linked with physical education, discuss attitudes toward sports, and set up their own physical education program.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with athletes and coaches and people involved in physical education or physical therapy
approximate preparation time: ½-1 hour
approximate class time: 1-2 classes

Physical Education Objectives:

to identify ways to become and remain physically fit; to identify attitudes conducive to developing and keeping up a personally satisfying physical fitness program.

ACTIVITY

This activity has two parts which look at physical education from the affective and the psycho-motor aspects. Either option separately or both options can be used.

Since both attitudes and physical development are basic goals of any athletic or physical education program the activity can be integrated into a physical education course during those occasions when the physical education facilities are not available for your normal use. With some advance planning, the discussion activities can be completed during one class period.

This activity centers around interviewing a professional working with physical development. Guest speakers can substitute for interviews, however, if the latter are more practicable. The exact person students interview (or invite to class) will be determined by the option they choose. The activity can be done in small groups or by individual students. Either option can be implemented or half the class can engage in one option and the other half of the class pursue the second. You or your students can

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identify people to interview by contacting local sporting and health clubs and organizations, the town, city, or county recreation department, or school coaches and varsity athletes.

Option I – Affective: Values and Sports

For this option, students interview one or more professional athletes from any sport, coaches, trainers, or anyone else professionally involved with the competitive aspect of sports. Each group member interviews one person. The group can be divided by either sport or occupation.

Each group compiles the results and develops a consensus that expresses the opinion of those interviewed.

Each student will then write a paragraph either agreeing or disagreeing with the results of the survey. The paragraphs are then read and discussed in the small groups. A summary of the discussion is then shared with the whole class.

Each group develops its own interview guide along the lines of the following sample guide.

Sport concerned: _____

Job title: _____

Job tasks: _____

Education and/or training: _____

What are your ideas on: _____

- Competitive Spirit: _____
  _____
- Team Work: _____
  _____
- Fairness: _____
  _____

How do attitudes affect physical fitness, athletic ability, and athletic performance? _____
_____

How do you explain what a good mental attitude is? _____
_____

How do you get (or get your players) "psyched up" to perform well? _____
_____

Is there discrimination against or in favor of minority groups in your sport? Are the equivalent women's sports funded at the same level and given the same benefits? _____
_____

How do you cope with frustrations? _____
_____

How do you cope with losing? _____

_____

Option II – Psycho-motor: Exercise Program

For this option, students interview trainers, coaches, physical education teachers, physical therapists and professional athletes. Each group member interviews one person. The groups are formed around different occupations, so that all the members of a particular group will interview members of the same occupation.

Each group develops its own interview guide along the lines of the following sample guide.

Job title: _____

Job tasks: _____

Education and/or training: _____

Particular sport, if any: _____

What is the most important aspect of being in "good condition"? _____

_____

In your job or sport, what are the special physical requirements? _____

_____

_____

What are the best ways to keep "in shape"? _____

_____

_____

What are the three most important exercises? _____

1. _____
2. _____
3. _____

What is the program of exercise that you would suggest for an adolescent? _____

_____

_____

Should there be different physical exercise programs and exercises for boys and girls? _____

_____

Each group compares their interviews results and summarizes them. Each group then develops exercise programs that can be used by the average adolescent to get into and to stay "in shape." The groups then compare their exercise programs with each other.

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Follow-up class or small group discussion can be held on one or more of the following issues.

- Everyone knows that emotional state can have an enormous influence on athletic performance. What ways are there for a person to "psych" himself or herself up so that he or she performs at peak ability? How can one develop an attitude that is conducive to keeping up with a regular exercise schedule to maintain good physical health?
- Does exercise have an effect on emotional health? on one's personality? Do athletes "build character" or develop "win at all costs" attitudes?
- Should there be any discrimination between men and women, or boys and girls, in terms of what athletic programs are available, how much the school spends on them, what the purses are in professional athletic competition, or what exercises people should engage in for good physical health?
- What are some of the emotional satisfactions of being a coach, trainer, physical education teacher, or professional athlete? Do some people choose these careers because the job satisfies some personal needs for them, such as a desire for fame or power?

Useful Prior and Subsequent Activities:

- Career booklets can be made up on all the careers investigated and made available to other students.
- (Option II:) A series of conditioning exercises can be developed for younger or older students or for adults.
- (Option II:) Group members can implement the "exercise" portion of the physical education class.

Resources: There are numerous paperback books that describe the lives of athletes and coaches. Some of the better are:

- **Go Up for Glory,**
  Bill Russell
  (Berkeley Medallion)
- **Paper Lion,**
  George Plimpton,
  (Pocket Books)
- **Out of Their League,**
  Dave Meggyesy
  (Paperback Library)
- **Instant Replay,**
  Jerry Kramer
  (Signet)
- **Ball Four,**
  Jim Bouton
  (Dell)

Students can also write to:

- President's Council on Physical Fitness
  400 Sixth Street, S.W.
  Washington, D.C.

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS

- Sport Store Salesperson
- Manager of Sports/Recreation Facility
- Writer
- Ticket Seller, Usher, Concessionaire
- Recreation Supervisor

PHYSICAL EDUCATION RELEVANCE

- Physical Fitness
- Athletic Skills

Activity #50

Subject Area:

Physical Education

SUPPORT FOR PHYSICAL FITNESS

Capsule Activity Description:

Students investigate careers related to the sports and recreation industries by interviewing employees in these industries.

Teaching Prerequisites:

materials: none
contacts with community: interview at sport or recreation facility
approximate preparation time: ½-1 hour
approximate class time: 1-2 classes

Physical Education Objectives:

to identify the relationship between athletic equipment and athletic skills;

to analyze the relationship between general physical fitness and athletic skills.

ACTIVITY

The purpose of this activity is to have Physical Education students become aware of the career opportunities related to the sports and recreation industries.

The activity does not easily integrate directly into the normal physical education program as held in most schools. However, in most physical education programs there are days when a non-athletic activity is needed; for example when the usual facilities are unavailable due to repairs and maintenance or because the facility is "set up" for a special event. The beginning or end of the school year are other possible times you can use the activity, or simply when a change of pace is needed.

Students divide into small groups according to favorite sports or recreations. Each small group "brainstorms" jobs related to the sport under discussion. For example, a group on skiing would identify professional ski racer, mountain resort manager, ski instructor, ticket seller, ski shop salesperson, sports writer, accountant at a resort or local restaurant, and surgeon.

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Each student chooses a job from the list for further investigation. Interviewing is the best way to investigate the job, but if a personal interview is not possible, a written or telephone interview can be arranged or guest speakers invited to class. Students may already know people who will be willing to discuss their job, or their parents may be able to help out. The local telephone book can be used to identify companies whose personnel or information officer can be contacted for the names of people to interview. Finally, you or other physical education teachers, the school athletic coaches, and students or varsity teams can be contacted for the names of appropriate people to interview.

Each group or student develops an interview guide along the lines of the one presented below.

Job title: _____

Job tasks: _____

How does this job relate to the enjoyment of the sport or recreation? _____

_____

How does this job affect the physical fitness or skills of athletes and recreational sports people?

_____

Why was this job first chosen? _____

What are the advantages of this job? _____

What are the disadvantages of this job? _____

Special education and/or skill requirements for this job? _____

_____

Other related jobs: _____

Within the sport or recreation area: _____

_____

Outside the sport or recreation area: _____

_____

Other interesting information: _____

_____

The members of the group compile the job information into a booklet describing the job opportunities in the sport or recreational activity. All information gathered is shared, time permitting, with the whole class. The booklets can be made available to all the students in the class and in the school through the guidance office or the library.

Useful Prior and Subsequent Activities:

- A manager of a sports facility can be invited to the class to discuss job opportunities in his/her facility.
- A staff member of the local Employment Security Office or an employment counsellor can be invited to react to the booklets and discuss the job market.

Comments from Teachers and Students After Using the Activity:

RESOURCES

RESOURCES

This Resources chapter discusses three aspects of career education which must be considered in order to implement the activities most productively. The first resource, Teacher Objectivity in Career Education, suggests how to avoid sex, ethnic, class, political, and religious stereotyping of careers and jobs. The second resource, Liaison with the Community, discusses some effective methods for identifying appropriate people, businesses, and groups in your community whom your students may want to interview or observe, and suggests ways of contacting these resources. The third resource, Effective Teaching Methods for Career Education, offers ideas on how to implement easily and effectively those instructional strategies, such as role plays, interviews, and volunteer work, which are highly effective for teaching career education.

TEACHER OBJECTIVITY IN CAREER EDUCATION

This resource is designed to help you to avoid sex, ethnic, and class biases when you implement the activities. Such biases can occur in career education because the topics and feelings discussed are often very personal. However, you will not only want to prevent **your** personal feelings about particular careers and individual students from intruding into the classroom, you will also need to help your students become aware of and explore **their** biases and stereotyped thinking.

Support, Not Direction

Your role in career education is to supply opportunities for students to gain information about careers, to investigate interesting careers, and to evaluate themselves in relationship to the specific careers under study. In this process you supply a supportive, not a directive function, by helping students to find out the range of opportunities available and helping them to discover for themselves their own interests and abilities.

How can you avoid getting drawn into a directive role? What can you do if a student asks you, "Do you think I'd make a good electrician?" or "I've been accepted at MIT and also at Louisiana State University. Should I go to MIT and become an engineer or go to LSU and major in history?"

Some useful ways of responding to requests for advice and yet maintain your objectivity are to:

- Be completely honest. Students can detect insincerity and hypocrisy very quickly. This does not mean telling them everything you feel or believe about a job or answering all questions about your own occupation and background. It does mean telling students you don't want to express your opinion on an issue, if you don't, and saying you won't answer some or all questions about your personal job experiences, if you don't want to.
- Avoid giving advice about what jobs students should prepare for or select. This may be hard to do since it is what students often seem to want most. Unfortunately, giving advice about career preparation and selection rarely helps students because:
  - it excuses the student from responsibility for his or her decision if he or she does take your advice;
  - it discourages students from solving their own career problems and asking the **right** kinds of questions from adults.
- Offer information, clarify ideas, suggest methods for finding more answers (research, sources of help), and ask students leading questions ("Why are you afraid of becoming an electrician? Do you think you could develop these skills? Do you have this kind of personality?").

Neutrality, Not Moralizing

Students and adults have stereotypes about certain occupations, some of which, like garbage collection and psychiatry, are the butt of many a joke and snide comment. You can avoid denigrating these occupations–and avoid moralizing favorably about careers traditionally viewed as prestigious–in the following ways:

- Avoid making judgments about careers and jobs, such as, "It's terrible to be an obstetrician–you can get called out of bed at any hour." Instead, note that "Obstetricians sometimes have to be called out of bed at all hours of the night."
- Tell students who ask, "Do you think it's bad to be a garbage collector?" that they must form their own conclusions. You might begin by asking them what they mean by "bad" or "good" and whether they think the salary and hours would be sufficient compensation for the job.
- Whenever occupations or careers are discussed that society makes fun of or degrades, such as garbage collection and ballet dancing, raise for discussion some of the advantages and satisfactions of such occupations as well as the disadvantages and dissatisfactions, and how the people who hold such jobs cope with society's negative attitudes.
- Don't **glorify** careers in medicine, law, engineering, education, and so on, which are generally viewed as lucrative, prestigious, and enjoyable. Let students, on the basis of facts provided in the activities (and from you), come to their own conclusions about these high prestige occupations. In short, present facts ("Being a lawyer can be boring at times"), not judgments ("You won't like being a lawyer, because it often involves boring work.")

Provocation, Not Restriction

While you want to be carefuly not to let your biases about careers intrude into your teaching, you do want to encourage–even provoke–your students to express their stereotypes and prejudices. Students need to express their biased opinions and strong feelings about jobs because only by verbalizing and discussing their attitudes will students be able to correct their misconceptions and make career decisions rationally. In order to create an open class atmosphere where students feel free to express honestly their personal feelings and opinions about jobs you will want to:

- Welcome all student opinions non-judgmentally. This does not mean simply tolerating divergent views; it means actively soliciting them by:
  - indicating that in selecting which career to explore or pursue there are not "right" or "wrong" answers;
  - explicitly asking students to express their opinions and feelings and indicating that while you, of course, have opinions and feelings of your own, you will not express any judgments of what the students say, nor are you interested in judging what they say;
  - asking open-ended questions, such as, "Is it all right to switch careers after age 50?" rather than, "Why is it often difficult to switch careers after age 30?"
  - including in quizzes and tests preference questions that are not graded on the basis of what preferences students express but are either ungraded or graded on the basis of how thoroughly the preferences were explored.
- Repeatedly encourage students to address their opinions to each other and to respond to each other's comments rather than always directing their statements to you.
- Have students discuss issue-oriented questions in small groups and instruct pupils to concentrate on the expression and substantiation of opinions.

- Take advantage of occasions when students seem to "get off the track" in a discussion and talk about feelings that may seem unrelated to the career education issue at hand. Often these so-called "irrelevant" opinions and feelings are the basis for students' (and adults') underlying feelings about occupations.
- Encourage and assign students to read fictional and autobiographical literature about careers where the emphasis is on expression of feelings.

Objectivity, Not Bias

Since biases and stereotyping are natural human responses to living in any society, you will want to make a special effort when you teach career education to be aware of and to compensate for class, sex, ethnic, and political biases toward occupations that either you or your students may have and express. In general, adopt a dual posture when it comes to sex, race and other biases in career education. On the one hand, try to be as **tight-lipped** as possible **about your own biases,** preventing them from intruding into the classroom. On the other hand, be as **active** as possible in promoting full exploration of all biases expressed and felt **by your students.** Seize every opportunity to promote discussion about **their** attitudes and stereotypes about who should consider what kinds of jobs and careers.

There are four areas of bias you will want to be careful to avoid in your own approach to teaching career education.

- **Class Bias:** Try to devote "equal time" to talking about and implementing activities on doctors, lawyers, and engineers vs. truck drivers, typists, and construction workers. In addition, don't express the opinion (if you hold it) that lower class or poor students should not consider entering white collar professions or that middle-class students shouldn't contemplate taking blue-collar jobs. Instead, probe the reasons students give for their job preferences and discuss with them the advantages and disadvantages of the jobs or careers being studied.
- **Sex Bias:** Avoid the use of sex-biased occupational terms. Refer to "fire fighters," not firemen, "chairperson," not chairman, and so on. The use of sex-free terms will sound unfamiliar to most students and may therefore prompt questions about them and a lively discussion. Also avoid using the pronoun "he" when referring to people in general, and instead say "he or she." More importantly don't use the pronoun "she" when referring to people in occupations traditionally held by women (nursing, elementary school teaching, clerical, etc.) or "he" when referring to occupations traditionally held by men (law enforcement, engineering, etc.). Finally, don't express opinions you may have about why women should not become baseball umpires, taxi drivers, or surgeons or why men should not become nurses, ballet dancers, or telephone operators.
- **Ethnic Bias:** As with sex or class bias, try to ignore any feelings you may have about students from particular ethnic backgrounds who may be considering occupations which much of society regards as "inappropriate" for blacks, whites, Mexican Americans, Native Americans, or any other ethnic groups. Remain neutral not only about minority group students who express interest in entering traditionally majority dominated professions, but also toward white students who are considering taking jobs traditionally held by minroity groups.
- **Political Bias:** Finally, be aware of your feelings about such jobs as careers in the military, working for the United Nations, writing for the **Daily Worker** or the **Minuteman,** and other politically sensitive occupations. Try not to let your political opinions intrude into your discussions of these careers.

When your **students** express biased or stereotypic sentiments, accept **their** feelings and opinions as honest reactions of human beings and treat them calmly and honestly. In many cases the reaction of

other students will balance the biased statements. Values are learned slowly and changed slowly, so a one-shot overreaction on your part will have little or no effect on the students except to quiet them in future discussions and possibly entrench the bias.

Many students are not aware of their own biases or of the biases in the world of work. Career education should seek to make **all** students aware of **all** possibilities for careers by bringing about such awareness.

Another aspect of bias in career education you can discuss with students is awareness of social prejudice and stereotyping which people can expect to face in selecting certain occupations, whether such biases should influence their choice of a career, and how, having selected a career which may provoke prejudice, to cope with that prejudice.

For example, you might discuss some of the problems women face who try to become or already have become doctors, politicians, and baseball umpires or problems minority persons face who are seeking to become or who have already become bankers, skilled craftspersons, and police officers. Discriminatory behavior you can discuss includes less preferred job benefits and slower or non-existent promotion opportunities. You can also discuss and **role play** ways women and minorities can try to cope with the discrimination they may experience in these occupations. Students can discuss and role play such options as firmly but not defensively resisting all or crucial instances of discrimination; seeking internal (through the company or agency) or external (through the courts) redress of grievances; and retaliating more forcefully against the persons responsible for the discrimination in ways that can terminate the discrimination even if these methods won't change anybody's prejudiced attitudes.

Student awareness of biases in others and of their own prejudices can be approached in many ways. The main requirement is that you be alert to opportunities to **bring up the issue** indirectly and naturally. Ways in which to address the issue of bias and stereotyping include the following:

- Assign students to nontypical roles such as the male nurse, the female carpenter, and the black employer or supervisor confronting the white employee. This type of indirect approach can help students learn to cope with discrimination and bias and also present an opportunity for students to react to the issue of discrimination in a realistic context.
- Whenever a student makes a sex- or class-biased comment, raise the issue for discussion—for example, if a student laughs at the idea of a female astronaut, ask the class to discuss what is "wrong" with a woman becoming an astronaut and what they find "funny" about the idea.
- When a student refers to a "fireman" or "repairman," point out the masculine bias in these terms and ask what significance there may be to the use of such words in terms of sex bias.
- When students develop polls or interview instruments, review them for sex and class biases and stereotyping and point out any such prejudices.
- Conduct one or more of the activities which specifically involve consideration of sex or class bias, such as Activities 3, 5, 7, 12, 14, 24, and 32.

In conclusion, your major concern should be to listen to yourself speak (and think) so you can avoid expressing biased (or any) opinions about students or occupations and, conversely, to listen carefully to what your students say so you can point out to them what may be biased thinking on their part and raise for discussion specific instances of class, sex, ethnic, and political bias as they relate to careers and jobs.

LIAISON WITH THE COMMUNITY

Since many of the activities in this manual involve field trips and interviews with members of the community, this resource is designed to help you identify and enlist support from appropriate

individuals, groups, businesses, and agencies in your local community. For information on how to plan such activities as field trips and interviews, consult the last resource section, Effective Teaching Methods for Career Education.

Identifying Places and People to Contact

When arranging a field trip or interview, you and your students will need to: (1) identify appropriate **places**—businesses, agencies, etc.—to visit; (2) identify the **person** within the site you have selected who can arrange for the trip; and (3) identify appropriate **tour guides or interviewees** at the site.

When selecting sites to visit, you of course want to choose those which are relevant to the activity you are implementing. You should also pick ones which are likely to be interested in providing a tour or interviews so that you do not waste your time contacting businesses or agencies who keep rejecting you. Therefore, your first step should be to learn whether your town, city, or school district is one of the many which provide a list of companies and agencies that encourage field trips. You can obtain this information from your State Department of Education, local superintendent of schools, or state or school audio-visual department. Some localities that do provide such lists are:

Los Angeles City Schools
Baltimore City Public Schools
Cuyahoga County Schools (Ohio)
Antioch Unified School District (California)
Marin County Schools (San Rafael, California)
Washington, D.C. Public Schools
Milwaukee Public Schools
New York City Public Schools
Schenectady City School Districts (New York)

There are several other resources you can contact for help in identifying companies and agencies which encourage field trips. The best persons to help you make contacts are:

1. School administrators who have contacts in the community;
2. The school guidance department;
3. Students who hold part-time jobs or have older brothers and sisters who hold part-time jobs in companies and agencies;
4. Students' parents who work.

You can also thumb through the advertisements in last year's school yearbook for companies which, having already made contact with the school, may be receptive to your requests. Failing all else, you can seek information on sites to visit in the public library, in the Yellow Pages of the telephone book, from local labor unions, and from business associations and fraternal clubs, such as the Rotary Club, Lions, Masons, Elks, Moose, Chamber of Commerce, and Better Business Bureau.

Having identified the place you want to visit, your next task is to decide whom to telephone or visit at the site to arrange for the field trip. What you want to do is to make as few phone calls or visits as possible before contacting the person in the company or agency who has the **responsibility for authorizing** a field trip. When possible, utilize the same contacts listed above to learn whom you should call or visit. If you must, take "pot luck" by asking the company switchboard for one of three departments:

- Personnel Office;
- Information Office;
- Public Relations Department.

It may take you a few calls to reach the person you want but by starting with these three offices, you will have already cut through considerable "red tape."

Enlisting the Interest of Target Businesses and Agencies

Once you or your students have identified people and places to visit, there are several ways to go about contacting them and stimulating their interest in your project. The best approach, where time permits, is to (1) send a letter indicating you plan to call for an appointment and explaining why you want to meet, (2) telephone two or three days later to set up a time for an appointment, and (3) visit the responsible official.

In all your communications—in your letter, your telephone conversation, and during your visit—you may need to combine tact with persistence to enlist the individual's support. On the other hand, many people and places will welcome a visit from your students. If you are expecting objections or have never arranged for a field trip before, there are several ways in which you can prepare yourself for the telephone call and visit.

1. Try to find out whether other teachers in your school have had any contacts with the agency or business in question and can give you advice on how best to approach it.
2. Try to get the name of at least one person who works for the business or agency so that you can use that person's name as a reference when you make your call and visit.
3. Role play the telephone call and the visit with your spouse, friend, or students, with the other party playing the role of the agency or business contact and asking you different types of questions—informational, hostile, curious, indifferent, busy.
4. Have already at your fingertips the answers to as many questions the business or agency contact is likely to ask you. This requires some advance planning. Industries or agencies are likely to want to know the following from you before they agree to host a field trip;
   - How old are the students?
   - How many will be coming?
   - How many adult chaperones will there be?
   - Will there be any discipline problems?
   - What days and hours can they come?
   - How long will they want to stay?
   - Do the students' parents know about and approve the trip?
   - What do the students want to see?
   - With whom do the students want to talk?
   - Will the students be bringing cameras or tape recorders?
   - How will the students be getting here and back home or back to school?
5. Be prepared to be flexible. If the contact says the business or agency can accommodate only six students just on Saturday mornings, indicate you will examine this possibility with your students and call back. If the contact wants more adults present, indicate you will try to work that out and will call back.

6. Try to think of ways in which the trip will benefit **the agency or business.** Do a little "selling," if you have to. For example, perhaps the trip will provide the agency (e.g., police, courts, prisons, juvenile detention centers, parks department, welfare department) with a little free public relations. The trip may also help a business (e.g., toy stores, food chains, automobile companies) with some free advertising. You can even have the school system's purchasing agent make the initial contact, since many businesses may want to become or remain the school's supplier of toilet paper, food, desks, office supplies, and heat.
7. Think in advance of the objections a particular business or agency may raise and of ways to meet their concerns. For example, have other classes or small groups of students taken field trips in the past to an agency? If so, is the agency likely to feel "saturated" with field trips and tired of them? It might be valuable to let the agency know that the trip will be related to career education, that your students may be interested in exploring potential job opportunities with the agency, and that they have been deeply engaged in the study of the occupations and operations of the agency.
8. Have ready the questions to which **you** need the answers before you call or visit. This is important, because it will save you and, more importantly, the agency or business the trouble of having to talk with you a second time and will also indicate the seriousness with which you view the trip—you've obviously given it a lot of advance thought. Questions you may want to ask include:
   - How many students can the agency or business accommodate?
   - Can more than one small group visit the site on different days? at the same time?
   - What legal problems are there in bringing students into the site? (See the discussion of this problem below.)
   - Should the students wear any speical type of clothing (e.g., old clothes for visiting a steel plant)?
   - Can the students also ask questions of some of the employees? In particular, can they talk to _____?
   - Can the students take notes during their tour or bring tape recorders or cameras?
   - How much time will they have for the tour?
   - How much time will they have for interviewing employees?
   - Is there a translator or someone who speaks Spanish?
   - Will students on crutches have difficulty getting around?

While all these techniques for enlisting interest in your activity on the part of agencies and businesses can be helpful and at times essential, much will depend ultimately on your own personal style of talking and interacting with people. In general, the more consideration and awareness of the agency's or business' feelings and concerns you can show, the more likely you are to be successful in winning its approval for a field trip or interview.

Logistics of Field Trips and Interviews

While you can certainly participate in chauffeuring students to businesses and agencies for their interviews and tours, unless you have a school bus at your disposal, a good deal of free time, and considerable patience, you are not going to be able to take your students on more than one or two trips a month. Your major resource for transportation will therefore be parents. Make use of them. Not only will they be doing you a favor, they will also be helping their children and developing a sense of involvement with the school.

Often, if you tell the class you need drivers or chaperones, students themselves will offer the "services" of their parents to take them on a trip. You can directly ask students to ask their parents to drive them to the field trip site or to accompany them on the bus or subway. When you do this, you will get better results if you write the parents a personal note indicating the purpose, nature, and time of the trip and why you need their assistance. Follow up any positive responses with a phone call to confirm the time and place to meet with the students and pass this information on to the students.

Legal Issues Involved in Field Trips

Generally, industries and businesses have their own insurance which protects them if a visitor is injured while on their property. However, this does not mean that industries and agencies particularly want to risk such a suit nor that your students and their parents are particularly anxious to initiate one, should an accident occur. Therefore, you will want to inquire of your school superintendent or principal what legal coverage you and your students have in case you, they, or their parents should be injured during a field trip. For example, in many communities students can sue **you** if you are driving them to a site and get into an accident.

The most effective way to protect yourself is to secure for each and every field trip a signed letter of approval from a parent or legal guardian giving his or her approval for the student taking the trip. The letter must indicate the purpose, date, and destination of the trip. Give copies to your students and tell them they can't go on the trip unless you have a signed copy returned to you **before** the trip. You may also want to consider sending the letters to their homes.

When all is said and done, you may have to run the risk of a car accident and lawsuit if you really want to provide the field trip. The important consideration is to learn what legal risks you, your students, and any chaperones are running, take what precautions you can to minimize them, and make your decisions with full knowledge of the potential consequences.

Three Key Resources

When you set up field trips and interviews, you have three key resources you can call upon for assistance: students, parents, and administrators and guidance counselors.

Students. When possible, let your students do much, if not all, of the work in arranging for field trips and interviews. Making contacts with businesses and agencies will in itself be a learning experience for them. They may find it helpful to read this section of the manual on "Liaison with the Community." They may not be as effective as you, because some agencies and businesses may feel less compunction about turning down students' requests than in turning down a teacher's. However, even if students fail in their attempts, you can pick up where they left off and set up the tour.

Parents. We have already stressed the utility of using parents to help transport and chaperone students, the importance of securing their permission for any field trips their students plan to take, and the likelihood they can help identify and even contact businesses and agencies where they or their relatives are employed. You can also enlist parents' support and assistance by formally writing them early in your unit to outline what you plan to teach, how you expect to teach it, and why. Invite them in this letter to phone or visit you at school for further information. Most parents will appreciate being spontaneously informed and consulted on their children's education. You can also invite parents to observe your class and to share with students in appropriate activities their own work experiences (although you should be sensitive to the feelings of students who will be embarrassed in front of the other students by having one of their parents come to class).

Administrators. As already indicated, school administrators and guidance counselors can also be of

assistance with the contacts they have with businesses in the local community. In addition, your effort to enlist their support and assistance will be simplified if early in your unit you inform them, like parents, about your plans. Not only will you thereby have "read them in" in advance to your course plans, you will also have provided them with the necessary background information to respond to any telephone calls from parents or other members of the community questioning the legitimacy of your field trips, interviews, or polls. Finally, you can solicit suggestions from administrators and guidance counselors on what they would like included in career education activities.

After the Trip

After each field trip, write a letter of thanks, and have each group of students or class do the same, to each key person in the business or agency who made the trip possible. Not only is this a simple act of courtesy, it also ensures that future students will meet with a warm response when they try to set up a trip to the same site. Also thank any guidance counselors, administrators, and parents who provided assistance. At the end of a series of trips, you can write a letter to the editor of the community newspaper to publicly express your thanks to the parents who helped you and to the businesses and agencies which provided tours and interviews.

The following check list may be helpful to you as you arrange for field trips and interviews. You can also duplicate copies for your students each time they arrange their own field trips or interviews.

CHECK LIST FOR ESTABLISHING LIAISON WITH THE COMMUNITY

____I. IDENTIFY PLACES AND PEOPLE TO CONTACT

1. Identify site by using

____ a. Published list of interested agencies

____ b. Personal contacts

____ i. School administrators

____ ii. Students

____ iii. Students' parents

____ iv. School guidance department

____ c. Advertisements in school yearbook

____ d. Yellow Pages

____ e. Business associations

____ 2. Identify whom to write and/or telephone

____II. ENLIST INTEREST OF TARGET BUSINESSES AND AGENCIES

____ 1. Send letter

____ 2. Plan for problems

____ a. Seek advice

____ b. Seek contacts

____ c. Role play

____ d. Have answers ready

____ e. Be flexible

____ f. Identify how you can help the site

____ g. Foresee objections
____ h. Prepare your questions
____ i. Adopt a firm but sensitive posture
____ 3. Telephone
____ 4. Visit

____ III. PLAN LOGISTICS
____ 1. Transportation
____ 2. Chaperoning

____ IV. CONSIDER LEGAL ISSUES
____ 1. Question site contact
____ 2. Talk with school administration
____ 3. Secure permission letter from parents

____ V. UTILIZE FULLY ALL RESOURCES
____ 1. Students
____ 2. Parents
____ 3. School administrators and guidance counselors

EFFECTIVE CAREER EDUCATION TEACHING METHODS

This resource contains suggestions on how you can most effectively implement the teaching methods suggested in the activities. The teaching methods incorporated in the activities are among the best instructional strategies for enabling students to become aware of different occupations, develop self-awareness, explore occupations, and make tentative career decisions.

The methods discussed are:

Role Plays	Polls	Independent Study
Games	Small Group Discussions	Research
Field Trips	Class Discussions	Volunteer Work
Interviews	Peer Teaching	Writing

ROLE PLAYS*

Role playing is an extremely valuable method of learning about careers.

Essentially, role playing is an activity in which one person pretends he or she is someone else and acts in the way he or she believes that the other person would act. Thus, a student can act as if he or she were an employer, an employee, or a recently unemployed worker–that is, he or she can play the **role** of these other persons.

*For further readings on role playing, consult one or more of the following books and pamphlets.

Boocock, Sarane S., and E. O. Schild, eds., *Simulation Games in Learning*, 1968, hard cover @ $8.95. Sage publications, Inc., 275 South Beverly Drive, Beverly Hills, California 90212.

Carlson, Eliot, *Learning Through Games*, 1969, hard cover @ $4.50. Public Affairs Press, 419 New Jersey Avenue, S.E., Washington, D.C. 20003.

Glazier, Ray, *How to Design Educational Games*, 1969 (fourth edition–1973), softcover booklet @ $2.50. Games Central, 55 Wheeler Street, Cambridge, Massachusetts 02138.

Utility of Role Playing for Career Education

Role plays have three great advantages in career education:

1. Role playing offers an unusual opportunity to **promote understanding and empathy** between types of people who often have difficulty communicating effectively with one another, such as consumers and salespeople, citizens and politicians, employers and employees, parents and children, and teachers and students. In career education, students' understanding of the problems and attitudes of executives, managers, employers, employees, union members, strike breakers, labor leaders, unemployed workers, underemployed workers, and other groups can be promoted by role playing these people.
2. Role playing allows students to **experiment with occupational roles and personalities** they may be unable to assume in real life (due to lack of confidence, peer pressure, etc.). For example, the extremely shy student who plays the role of a very outgoing person his or her own age may get the opportunity to forget momentarily his or her shyness and experiment with a new role. Role playing allows students to "try on" personalities and roles in a non-threatening situation.
3. Role play encourages the development and expression of **feelings** about careers. This is particularly important in a curriculum dealing with an emotionally charged area such as how to support yourself for the rest of your life.

Designing Role Plays for Career Education

1. When to Use Role Plays

Role play is most appropriately used to illustrate and explore relationships involving problems between people about work and their attitudes toward career issues. Some examples of problem situations that lend themselves well to role plays are:

- Labor union leaders "negotiate" a new contract with leaders from management.
- Members of a community "debate" the type of new industry, i.e., new jobs, to be allowed into the area or solicited to enter the area.
- Minority person or woman seeks to "persuade" a company to hire a certain percentage of minority or female employees.
- A qualified woman "applies for" a job as an automobile mechanic, construction foreman, etc. and is kidded or harassed by her potential male colleagues.

2. How to Write Role Plays

The most important task in role play is getting people emotionally involved in their new roles. To help achieve this, you must provide the students with written "role profiles" or descriptions of the person whose role they will adopt. Each role profile should:

- be as brief as possible;

Inbar, Michael, and Clarice S. Stoll, *Simulation and Gaming in Social Science*, 1972, hard cover @ $10.50. The Free Press, A division of the Macmillan Company, 866 Third Avenue, New York, New York 10022.

Tansey, P. J., and D. Unwin, *Simulation and Gaming in Education*, 1969 hard cover @ $5.00. Harper and Row, Keystone Industrial Park, Scranton, Pennsylvania 18512.

Twelker, Paul A., ed., *Instructional Simulation Systems*, 1969, paperback @ $6.75. Continuing Education Publications, Waldo Hall 100, Corvallis, Oregon 97331.

Zuckerman, David W., and Robert E. Horn, *The Guide to Simulation/Games for Education and Training*, oversize paperback @ $15.00. Information Resources, Inc., P.O. Box 417, Lexington, Massachusetts 02173.

- be written in the second person ("you believe you are the most qualified person for a job but someone else got it," not, "The person you are playing thinks he is the most qualified. . ."); and
- be given to students in advance of the actual role play if research or familiarity with the part is necessary.

The role profile should include enough concrete details so that the role is clearly structured and focused and the student understands the character he or she is to portray. To ensure this, the role profile should provide the student with:

- The motives and goals of the role ("You want your wife to stay home and let you support the family");
- Obstacles in the way of achieving your goals ("Your wife claims that she is bored now that the children are married"); and
- Enough incidental information about the person to make him or her seem real to the student. ("You are 42 years old, have less education than your wife, and like to be the boss in your home").

There is another type of less structured role profile which requires the participant both to **define the character** he or she plays as well as to resolve the problem. This type of more open-ended role play enables students to explore several different identities as they try to resolve the problem presented in the role play situation.

3. How to Write a "Scenario"

A scenario is a capsule history of the events that precede the situation that is going to be role played. The scenario contains all the information that is common knowledge to all players. The last sentence sets the stage for the action of the role play. ("This husband comes home to find his wife looking up the telephone number of an employment agency.") You or your students can write your own scenario or take a published story and omit the ending, with the students role playing possible completions.

How to Teach Role Plays

- **Introducing role playing to students:** Always begin by explaining what role playing is and what it is intended to accomplish. Give an example. You can then engage in "warm up" activities with students who are unfamiliar with role playing. You can, for example, have students respond **in writing** to several scenarios taken from newspapers, articles, or books or to scenarios which you or your students develop. You can also relate an incident similar to the one in the role play and ask students, "Have you ever been in a situation where you . . . etc." After students have talked about their experiences in this example, you can move on to indicate that they are going to role play a story similar to the one they just discussed. Finally, you can have your students practice with a sample role play in which they play their parts from their seats, using dialogue and no action. (If students are unable to act out role plays even after several attempts, in-seat role plays can often be profitably used.)

  Above all, treat role playing as a serious learning activity both when you introduce it and when you supervise it. Otherwise, students may view it simply as "fun and games," not as the potent learning method it is.
- **Moderating a classroom role play activity:** When introducing an actual role play activity, begin by passing out and/or explaining the scenario to the whole class. Ask for volunteers to play the

roles. Avoid selecting students who volunteer to play roles that may be too emotionally upsetting for them—for example, letting a student whose father has recently been killed in a job related accident play the role of the union inspector discussing job safety requirements at a negotiation session.

Pass out the appropriate role profiles only to each participant.

Before any action takes place, instruct observers to save all comments and questions until the role play is over. Observers should be instructed to think about how **they** would act were they role playing. Instruct participants that they have the right to call a "cut" in the action anytime they want without having to say why. This is to allow participants who feel they are getting too emotionally involved an easy "out" from what may, on rare occasions, be an unpleasant situation. You also need to be alert to the action and feelings of the role play and should not hesitate to call a "cut" if you feel the role play is arousing too much anxiety.

While action is in progress, do not inhibit it by commenting on or altering what is being said or enacted.

Observing students can participate in longer role plays as "reporters" who write down and/or later verbally describe what they saw and heard, comparing their accounts with each other and with what the role players felt occurred.

The role play ends when participants have reached a logical ending point or you "cut" the action because it is dragging or has become irrelevant. However, students can and often should repeat the completed role play as it stands with different participants or with new role profiles. Such repetition enables students to experience and observe a range of possible solutions to the problem presented in the role play.

- **Following up a role play:** Students should be encouraged to develop and use their own role plays and scenarios or to revise the ones you develop. Once attuned to the technique, students can often create role plays and scenarios about work issues that contain a realism and relevance that you might find difficult to attain.

  When a role play or series of role plays is over, focus in the ensuing discussion on:

  - what the students' feelings were as they role played;
  - what different actions the observers might have taken were they in the role play;
  - what their attitudes were toward the other players;
  - what the participants learned about the role they were playing and about the other roles.

  During this discussion avoid giving your opinion of whether the role played solution was "right" or "wrong" but concentrate instead on eliciting **alternative** solutions.

GAMES

Educational games harness the student's natural motivation to "play" and direct it for educational purposes. A game is a contest between adversaries (players) who act under constraints (rules) to achieve an objective (win). The player's "business" in a game is simply playing it to win; in educational games, learning is a natural by-product. The reason for this is that in order to play the game, players must learn the rules in order to simulate a real-world process. Thus, by learning the rules of the game, players learn the process that is being taught. For this reason, educational games are highly motivating; initially, a student need not even be interested in the subject at hand so long as he enjoys playing games.

There are several types of educational games, including role-play games, board games and drill games.

- **Role play games** are used to teach processes involving much negotiation, compromise, conflict, etc.—in general, human interaction. They differ from role plays, however, in that they are usually more structured (focusing on processes, not simply situations) and a winner (or several) is identified.
- **Board games** closely resemble commercial entertainment games in the paraphernalia they utilize (chips, boards, play money, etc.). They are applied to processes which benefit from graphic representation, such as various job levels in the manufacturing industry (or office occupations, etc.).

Most games are hybrids, in that they utilize role playing **and** boards, charts, etc. to record the progress and outcomes of human interactions.

- **Drill games** are placed in a separate category because the rules of the game do not necessarily simulate real-world processes and issues. Rather, the basic element of competition, common to all games, is utilized for motivational purposes in teaching or reviewing facts and concepts. For example, a game distinguishing job titles in relationship to the fifteen job clusters is a motivating way of teaching and/or reviewing the subject. Drill games generally utilize boards, cards and other paraphernalia although the spelling bee is a classic example of one that does not.

Utility of Game Play for Career Education

Games are useful in career education for at least six important reasons:

1. Educational games (even drill games) involve decision making, a necessary skill in selection of a career to explore or enter. Games encourage students to weigh the consequences of alternative decisions and develop effective strategies for winning. An important follow-up to game play is the discussion on why students acted as they did, what strategies proved effective, and what influenced them to choose one course over another. Students thus have the opportunity to "practice" decisions without actually having to suffer real-world consequences.
2. Educational games compress time and experience and therefore expose students to **more** decision making opportunities sooner than they would face in real-world situations and, most important, provide quick feedback on how effective their decisions were. In addition, in most games there is usually no single right answer. Players must therefore **experiment** with many alternative strategies and decisions to discover which are effective under what circumstances.
3. Games are motivating. Most students play to win. Therefore, drill games especially lend excitement to what might otherwise be boring review exercises. Games also can serve as springboards for further study.
4. Games are "self-evaluating." Poor game performance can suggest the need for further play (review) and/or other forms of reinforcement of learning. Although it is not their primary application, games can thus represent a diagnostic and evaluating tool. Another aspect of this is that effective game performance means success in the game. Students, by winning or doing well, are rewarded intrinsically, rather than extrinsically by the teacher.
5. Games provide special opportunities to learn and to perform well for students who have poor reading skills or other learning handicaps. Written information is often minimal, what is included must be utilized for successful game playing. Motivation to read is thus built in since students **need** the information to play the game. Students who consistently fare poorly in conventional classroom activities often do well in games because effective strategies, whether arrived at by conventional or unconventional methods, or with skills normally not cultivated in class (such as negotiating), are rewarded. Thus, games often motivate previously apathetic students to improve poor student self-image and do better in non-game activities as well.

6. Games integrate students of diverse ability levels and encourage peer learning. Students learn the rules of the game from each other as they play and pick up good strategies from other players.

Teaching Classroom Games

- **Introducing a game:** Display each different item of the game materials to the group(s) before play commences and explain the function of each very briefly. Then assign roles (where appropriate) and distribute rules and other materials to players. Where a game involves few players, assemble several groups of players and distribute a set of game materials to each. Simultaneous play by the entire class is desirable, because if any one group plays, the rest of the class will generally want to watch rather than participate in other activities.

  Consider mixing students of different ability levels, particularly if teams of players perform as one actor. Slower students will learn from more able ones. Where a game calls for each player to act as an individual, the teacher may wish to keep the ability levels fairly close so that one or a few players are not at an obvious disadvantage.

  Demonstrate some sample game moves by asking one or a few players to select their first action.

- **Moderating play:** Circulate among the players, and clarify rules if they ask questions. Where possible, encourage students to come to their own decision about an ambiguous rule in terms of what would be logical and accurate for the process under study. Resist the temptation to correct a student about to make an incorrect or poor move. The game itself usually penalizes errors and rewards correct or effective moves. Students must experiment and make decisions in order to learn from the game. However, if play is slow, suggest a move or a strategy to a player or a group to catalyze the action. Encourage experimentation but avoid suggesting all the options. Leave that to student exploration.

- **Post-game follow-up:** Determine the winner(s) of the game according to the scoring rules provided. Usually, players are rated on a continuum, so that instead of one winner and many losers there are gradations of effective players. Thus, it is unlikely that many individuals will feel themselves "the losers" and be hurt thereby. Winners in different groups can be announced to the class and can be asked to compare strategies.

  A good way to begin a follow-up discussion is to ask the winner(s) what he or she did that was particularly effective, or, in other words, why he or she thought he or she won. Ask students what they would do differently next time, what was their best move, worst move, etc. To synthesize the actions in a game, start with the concrete details of play. Rather than asking "what did you learn" (the usual response is "nothing"), ask "what did you do."

  Next, move on to analyzing the alternative decisions available to players, the consequences of various decisions, influences on the particular decisions they made, etc. This leads directly into discussions of issues in terms that are defined more broadly than the specific details of the game.

  Encourage students to change the rules (or other items) in the game which they feel are inaccurate or which represent interesting variations or questions about a process, and let them play it again.

  You may wish to stage a class "play-off" or even one for the school at large, if more than one class is working with the same career unit at the same time **and** if the game may be profitably replayed. (Some games, particularly review games, can be learned **in toto** and would not offer new learning to players who mastered them. These are games with a finite number of facts under review and are probably not profitably replayed.)

  Finally, you might pit your best players against some parents or other adults in order to demonstrate to both groups how much career information was learned.

FIELD TRIPS

The heart of a good field trip is the **immediacy** it provides—that is, the first-hand observation of activity that normally is learned about in schools only second-hand through readings, lectures, or discussion. Therefore, the more unique the learning experience will be. However, the extent to which students benefit from their observations depends significantly on how much they have prepared for the trip; otherwise, they may fail to observe many activities or misinterpret them because they have not been "primed" to be alert for them. Finally, the value of a field trip is enhanced when follow-up discussion takes place in which students share their observations and learnings and the class is forced to identify career components of the occupations they observed.

Where to Go on Field Trips for Career Education

This depends largely on the availability of community resources, transportation, and time. Some common sites entire classes or small groups can visit include:

- factory
- office building
- health facility
- construction site
- bank
- airport, bus or train station, seaport
- retail store
- personnel office
- Employment Security Office
- laboratory
- bakery, restaurant
- hotel, motel
- recreation site: theater, amusement park, sports facility
- repair shop: cars, appliances
- farms or fishing dock

How to Identify and Contact Places and People to Visit

Many cities and school districts provide a list of companies and agencies that encourage field trips, including times of availability and number of students desired. It is worth contacting your State Department of Education, local Superintendent of Schools or state or school audio-visual department to see if such a list has been compiled. Some localities that do provide lists are:

Los Angeles City Schools
Baltimore City Public Schools
Cuyahoga County Schools (Ohio)
Antioch Unified School District (California)
Marin County Schools (San Rafael, California)
Washington, D.C. Public Schools
Milwaukee Public Schools
New York City Public Schools
Schenectady City School Districts (New York)

Other sources you or your students can contact for help in identifying people and places to visit include:

- students' parents
- school administrators
- Chamber of Commerce
- Rotary Club
- Yellow Pages
- local business organizations and associations
- Better Business Bureau
- local, state, and federal public information officers
- labor unions

Parents in particular are an excellent source for identifying people and places to visit, because as employed persons themselves (usually), they can often easily arrange for students to take field trips where **they** work or, at least, put students in touch with responsible persons where they work who can organize a field trip.

Once you or your students have identified people and places to visit, there are several ways to go about contacting them and stimulating their interest in your project. While sending a letter can be helpful, the best approach, where time permits, is to (1) send a letter indicating you plan to call for an appointment, (2) telephone to set up a time for an appointment, and (3) make a visit to the responsible official. You may need to combine tact with persistence in locating the appropriate person to talk to and then to encourage him or her to host a field trip. On the other hand, many places will welcome a visit from your students. (See the second resource, Liaison with the Community, for further discussion of these issues.)

When possible, have your students set up their own field trips by writing their own letters, making their own calls, and making their own preliminary visits. This will not only relieve you of some of the burden, it will also provide a learning experience for the students.

How to Prepare for a Field Trip

Students should prepare carefully for a field trip by reading available literature on the place and persons they will be visiting, drawing up a list of specific questions to ask the people they will be talking to, and compiling a list of observations they hope to make. The following are sample questions students might ask of an automobile or appliance repair person whose facility they planned to visit.

QUESTIONNAIRE FOR REPAIR PERSONS

1. What is your specific job title? _____

2. In general, what do you do in your job? _____

_____

_____

_____

3. Which of the following skills, if any, are important for success at your job?

writing ☐ reading ☐ listening and understanding ☐

oral communication ☐ questioning ☐ notetaking ☐

4. Could you describe why these skills are important to your job? _____

5. Where and how did you learn these skills? _____

6. Do you feel you could have learned them better? _____

7. What other special skills are needed in your job and where did you learn them? _____

8. In general, what advantages and disadvantages does your job offer you? _____

9. Thank you for your time and interest. Before I (we) go, are there any other comments you would like to make about your job that might help us to understand what skills are needed to do it successfully? _____

The following is an example of an observation instrument students might develop for use while watching a journalist at work:

OBSERVATION INSTRUMENT FOR JOURNALISTS

1. What are the different things the journalist does? Keep a running list of them as you observe on the back of this page.

2. Whenever you see the journalist using one or more of the following English skills, write down next to the skill exactly what he or she is doing that involves using the skill.

ENGLISH SKILL	JOURNALIST'S ACTIVITY
a. Writing	1) (For example, an article.)
	2)
	3)
	4)
	5)
	6)
b. Reading	1)
	2)
	3)
	4)

c. Editing ..... 1) _____
2) _____
3) _____

d. Speaking Publicly ..... 1) _____
2) _____
3) _____

e. Interpreting ..... 1) _____
2) _____
3) _____
4) _____

f. Questioning ..... 1) _____
2) _____
3) _____

g. Taking Notes ..... 1) _____
2) _____
3) _____

During the field trip, students should observe and listen carefully, ask questions, and take notes. After a trip, follow-up discussion is essential to reinforce or supplement learnings and clear up any misunderstandings. Either in small groups or in a class discussion, students can discuss:

- what occupations they observed;
- what they learned about these occupations in terms of training needed to enter them, tasks and responsibilities involved, satisfactions and disadvantages, fringe benefits, salary and promotion schedules, and other employment related issues;
- what students hoped to learn but didn't, and where they can find this missing information;
- what interests the trip stimulated that students want to pursue further and how they can do so.

INTERVIEWS

Interviews should be an integral part of a career education curriculum for three reasons:

1. There are many fascinating and informed people in most occupations who are very responsive to the inquiries of students (see next page for potential interviewees).
2. Interviews are an excellent way to obtain firsthand information from people who have experienced career problems or been in direct contact with those who have.
3. There are a variety of opinions on a number of work issues with strong spokespersons for them, all of whom students can listen to and question about the bases for their beliefs.

When preparing students for a career related interview:

- allow as many small groups as are interested to conduct interviews and compare findings.
- require the students to study the appropriate career literature about their chosen topic in advance so that they may then draw up a list of critical questions to ask. Some of these questions may

seek factual information, but questions, when possible, should deal with areas of controversy or difficult-to-obtain information. Neither the interviewee's nor the students' time should be wasted on questions that can be answered by glancing at a career source book.

- have students themselves, if possible, contact the interviewee, arrange for an appointment, and request permission to bring a tape recorder;
- mention that how students dress for and how they behave during the interview is their business but to keep in mind that these factors can influence the success of their interview and the potential for future interviews with that source;
- encourage students to begin the interview by asking the interviewee his or her exact title, position and duties. This information is useful to gain an idea of how much credence to place in the interviewee's statements and to help students through the nervous first few minutes;
- instruct each student to take notes independently during and/or immediately after the interview since one "reporter" may not be able to write down everything that is said and different students may interpret what was said differently; and
- encourage students to ask critical but polite questions that probe inconsistencies, hypocrisies, unaccounted for results, successes and failures, and to ask open-ended, as well as specific questions, such as, "What's exciting about your job?"

Upon completion of an interview, the students can:

- evaluate the results in such terms as:
  - What career topics did the interviewee seem most informed about? Why?
  - What new information and ideas about the world of work did you learn?
- report their findings and **critical interpretations** to the class. These reports should always include the groups' **opinions** about what they learned; and
- write up their findings into an article for submission to the school and local community newspapers, if there is time. Permission should first be obtained from the interviewee.

One other type of interview students can conduct is the telephone interview. If interviewees are too busy or inaccessible for person-to-person interviews, they may be agreeable to answering questions over the telephone by appointment secured in advance. Students may also want to interview several persons to compare opinions or attitudes and can use the telephone for this purpose, too.

Types of individuals that students may want to interview include:

- Parents, relatives, and friends
- Personnel or employment security interviewer
- Equal employment opportunity worker
- Manager of major business or industry
- Owner of small business or industry
- Person in authority in large retail organization
- Owner of small retail operation
- Worker in large industry or store
- Worker in small store or shop
- Out of work professional person

- Out of work non-skilled person
- Retired worker
- Union worker
- Worker in non-union situation
- Workers in various clusters: manufacturing, health, recreation, science, etc.
- People who work with other people
- People who work with ideas
- People who work indoors
- People who work out of doors

You can also refer to the section on Field Trips for agencies and businesses whose employees can be interviewed.

POLLS

Polls and questionnaires can be extremely useful and exciting in a career education curriculum. By administering, collating and interpreting polls on careers, students can achieve three career education goals. They can:

1. learn about the variety of attitudes toward, beliefs about and behaviors in work situations in a realistic and meaningful way;
2. learn to make and understand correlations and thereby realize that opinions and behaviors on career issues can be dependent on age, sex, ethnicity, and other factors; and
3. develop skills in the areas of questioning, communication, validity, writing, and interpretation of data.

Construction of Polls

Students should be encouraged to develop their own polls or questionnaires but should be cautioned to consider several factors when doing so, including:

- phrasing questions in the way most likely to get an honest response in this potentially "touchy" area;
- avoiding questions that require a written response (respondents are often pressed for time, lazy, or afraid of handwriting detection);
- avoiding too long a poll (for the same reasons);
- assuring respondents of anonymity and seeing to it that the poll in fact cannot reveal names;
- investigating desirable and/or interesting relationships, such as sex, race, age, economic status, and political preference. These relationships, when tabulated after a poll has been taken, are called correlations (e.g., there is a positive correlation between economic position and level of education attained; that is, more middle and upper class people have a college education than do lower middle and lower class people);
- selecting the proper sample of people to be interviewed so that these correlations can be made. If students want to see if women prefer office work more often than men, they must be sure to include enough men and women in their poll to make such a comparison;
- deciding how many people should be polled (both conducting the poll and tabulating correlations by hand can take hours);

- testing the poll on the rest of the class to remove the "bugs," such as confusing questions or too limiting a choice of possible responses to check or circle;
- learning what a "representative sample" is, such as 10% of the school body; or .01% of the community – that is, a sample that is large enough to permit the poll taker to generalize about the group being polled; and
- discussing strategies for introducing themselves when the door is opened so that respondents don't slam the door shut or otherwise refuse to be interviewed. (Students might wear large name cards identifying themselves and their school, for example.)

Administration of Polls

How honestly a world-of-work poll is answered may depend on how it is administered. Some student respondents may be more honest and serious if the poll is administered by other students rather than by a teacher. On the other hand, faculty may answer more honestly if they are given the poll at a staff meeting by the teacher rather than if students stuff faculty mailboxes with the poll. Sometimes it is most effective to have a principal or dean administer the poll to the faculty. Students can also take polls home to their parents and/or knock on doors.

Tabulation and Interpretation of Polls

Students may need help drawing up a matrix to produce their correlations. The teacher should provide this assistance immediately, before students have wasted time making unnecessary tabulations. Sample matrices are:

	Men	Women	College Graduates	High School Graduates	Less than High School	People Job	Thing Job	Idea Job	Ages 18-25	25-45	45-65
Satisfied with job tasks and salary											
Satisfied with salary but not with job											
Satisfied with job tasks but not salary											
Unsatisfied with job tasks and salary											

	Men	Women
Satisfied		
Partly Satisfied		
Unsatisfied		

Students need to be reminded that poll statistics rarely explain **why** certain people hold certain attitudes and beliefs or act in certain ways. It is the researchers' job to **interpret** the findings.

When one or more small groups have conducted the poll, they should explain its results and interpretations to the rest of the class.

Below is an example of what a short poll might look like.

This is a poll drawn up and conducted by students at _____ _____ School. It is being used as part of a course of study on career education. We would appreciate your honest answers to the following questions. Please do not sign your name. Thank you.

Age: (Circle appropriate age level)
under 25 25-44 45-64 over 64

Sex: (Circle appropriate sex)
Male Female

Years working on this job: (Circle one)
less than 1 1-2 3-5 6-10 over 10

Circle response with which you agree most.

1. My job salary is satisfying to me.
agree disagree

2. My job tasks are personally satisfying.
agree disagree

3. My working hours are:
too long too short just right

4. I enjoy working with my colleagues:
a lot some a little not at all

After a poll has been completed and the results analyzed, students should present their findings to the class. They can also submit their results and interpretations as an article to the school or community newspaper. Finally, students can read other polls of adults and high school students and compare them with both their own questions and their own findings.

SMALL GROUP DISCUSSIONS

One of the most useful teaching methods for career education is to break classes down into small groups of three to six students for intimate discussions.

Utility of Small Group Discussions for Career Education

There are four major reasons why small group discussions are useful in career education:

1. Small groups offer a more receptive setting than class discussions for students to express their feelings and attitudes about occupations. Students often feel freer to express anger in arguing with a peer than with a teacher and less inclined to hide their real feelings about jobs since they are less likely to try to "con" their friends.
2. There is much more concern in small groups, as opposed to class discussions, with sharing opinions than with impressing you or supplying you with the "right" answer.
3. In small group discussions students can follow the natural flow of their concerns about occupations and work—moving freely from one topic to another, unfettered by feelings that they must stick to one topic only. In addition, small groups offer a better opportunity to follow up arguments than a class setting where 25 students may all want to "chip in."
4. Small group discussions develop several important skill areas needed to become aware, explore, and make decisions about occupations and careers, including cognitive skills (describing, analyzing, questioning, evaluating), affective skills (feeling concerned, feeling responsible, accepting, empathizing), and communication skills (arguing, influencing, listening).

Forming Small Groups

A useful approach to structuring small discussions around career issues is to present students with a problem situation and have them record, in no more than one page, how they would solve the problem. For example, rather than ask students to "write your opinion on whether women should have equal rights in the job market," tell students: "You are a state legislator and a vote is being held on the Equal Rights Amendment for women in the work force. How do you vote? Why do you vote that way? Or if you don't vote, why not?"

Two other approaches to obtaining student positions on a career issue are to place them in the position of a "Dear Abby" columnist for a newspaper or of a community hotline answering service. You can ask students to respond to letters seeking advice, such as "Dear Abby, I have always wanted to be a doctor. I get good grades and my teachers say I could do it, but my father says that a girl should take care of the home. He says that if I like medicine I should become a nurse. What shall I do? Bewildered."

These position papers should be written a day or two before the actual small group discussion so you have time to assign students carefully to small groups on the basis of their positions.

Several different considerations need to be balanced in forming the best possible small groups of students to discuss career issues. One alternative is to let the students form their own groups. This may create problems if friends stick with friends, with the result that students are not exposed to different points of view. In addition, introverted students may end up together, resulting in a continuous silence.

A better alternative is for you to make the assignments to the groups. Try to consider the following factors:

- The sex composition should be arranged so that no one is embarrassed by being the only boy or girl in the group, except for boys and girls who don't mind (and even relish) being the only member of their sex in a group.
- All the talkative students should not be clustered in one group and all the silent students in another.
- Each group should be so balanced that conflicting points of view are represented about the career issue being discussed.
- Depending on the class and your own feelings, it is often wise at the outset not to place several discipline problems in the same group.

Arranging the room for small group discussions can be left up to your discretion and the limitations of the facilities available. One useful method is to assign groups to different parts of the room and when they get there have them turn the now unoccupied desks into small circles.

Structuring the Discussions

When you have broken the students into small groups, you can return the position papers and pass out written instructions specifying what the groups are to discuss. These instructions can be put on the blackboard, if necessary. But some form of **written** directions is advisable.

You can assign the groups at least two tasks.

1. Ask them to try to resolve their differences on the career issue. (E.g., is money more important than job satisfaction in choosing a career?) If they can resolve the issue, they write their common solution on the blank paper. If they cannot agree, they can write down all the different positions they still hold.
2. Also ask them to discuss why they believe that their position is the "correct" one. These reasons can also be recorded. Normally, the attempt to resolve different positions involves consideration of why these positions are maintained, but it is useful to instruct the class explicitly to probe into the reasons behind each student's position.

While these discussions are in progress, you can move from group to group listening in, interrupting only when necessary (for example, encouraging a silent group or discouraging truly irrelevant discussion). In particular, watch for a tendency by students to reach agreement at the expense of serious discussion and questioning. You may need to reinforce again and again that students should accept no statements or opinions about work from their classmates without asking them why they believe them, even when there is general agreement. (People often agree on a position for very different reasons.)

Following up the Discussion

At the end of the period, or whenever discussion wanes, collect the papers. At this point, you can pursue at least two options.

1. The small group discussions can be continued in the following class, either around the same issue or some offshoot of that issue that seems to concern the students.
2. A debate can be held between two groups who agree internally but not with each other.

All small group discussions should be followed by informing the class of each group's decisions, preferably by having each group report its results to the rest of the class and then respond to questions and criticisms from the class and the teacher. At times it may be appropriate to ditto the groups' conclusions and pass out a composite set to the class for future reference.

Conclusion

The success of small group discussion depends on many factors, some of which have been enumerated above. Perhaps the most important factor is the selection of issues for discussion that really do concern students. Students should, therefore, help decide what these should be.

CLASS DISCUSSIONS

Normally, if a class can profitably discuss a **controversial** issue as a class, it can discuss the issue more profitably in small groups. Therefore, whenever possible, use small group discussions.

Class discussions are useful, however,

- when a previous activity requires a follow-up discussion to synthesize what took place. For example, a role play always needs follow-up discussion so that different students' perceptions, interpretations and feelings about what took place can be aired and summarized. Small group discussions also should be followed by class discussion so that students can learn and comment on what occurred in other small groups;
- when you feel that the discussion topic is complex and needs your guidance to assist students as they discuss it; and
- when there are not enough talkative students in the class to make active small group discussions feasible.

When these conditions prevail, there is a type of class discussion that can be particularly effective in a curriculum that deal with controversial areas like attitudes toward the world of work. This is **student-directed class discussion.** In this type of class discussion, students are trained to address their comments to each other rather than to you. When, for example, you ask whether racial hiring quotas should be established in companies with low percentages of minority employees, and one student disapproves, the next student comment should be directed at this previous student. In this manner, but at first with constant reminders, you can moderate a discussion so that students communicate **with each other.** If you choose to adopt this approach, you should make it explicit to the students by **telling** them to direct their comments to each other before the discussion begins and **reminding them** to do so whenever necessary. You will soon be able to encourage direct student-to-student communication with a forgetful pupil by a mere wave of the finger in the direction of the other student in the discussion.

You can moderate this kind of class discussion as you see fit, preventing excessive domination by a few few students, pointing out circular arguments, and disallowing excessive unproductive irrelevancies.

At the end of a class discussion (unless the class discussion was itself a summarizing activity), students should summarize orally or in writing the major points about the occupational issue that have been made and you should give your general impression of what was achieved.

Class discussions are also useful when there is a class consensus on what could or should be a controversial issue, or when most or all students in a class take a certain point of view for granted and have never examined its underlying rationale. Examples of frequently unexamined points of view include the "superiority" of monogamy, monotheism, capitalism, and the nuclear family. Examples in career education include:

- Labor unions are necessary to protect the worker.
- The owner takes the risk so he should take the profit.
- Education always leads to better jobs and better pay.
- Job satisfaction is not as important as a good salary.
- There are some jobs that women just cannot do and where women do not belong.
- A good job involves staying in one company and "working your way up the ladder."

When a consensus exists on an occupational issue, you can provoke a stimulating class discussion by playing devil's advocate and telling your class, for example, "Women make as good hockey referees as men." As students formulate their rationales—and different students may have very different rationales—you can force them to probe deeper and deeper into the foundations of their beliefs. The purpose of this approach is not, of course, to create confusion in the minds of pupils but to require conscious and substantiated rationales for holding strong positions about the world of work.

You may need to make clear to your class that you do not necessarily believe in the position you are advocating to prevent misunderstandings that may result in parent complaints.

PEER TEACHING

Students teaching other students is one of the most productive and exciting learning processes available to schools. Most teachers at one time or another have noticed students and their own children helping each other with homework and other academic problems. In an effective classroom some student-teaching-student activity is always going on, usually in discussions. This approach can be implemented systematically and becomes very useful in a career education curriculum for three principal reasons:

1. The students being taught often learn more efficiently than they otherwise might because:
   - They often trust other students' opinions and statements in controversial areas like career and life plans more than they trust those of adults and are often more willing to express their own opinions more candidly in front of each other than to a teacher.
   - They can often understand other students' explanations better than they can those of adults since the other students speak the same language and, more importantly, have recently gone through the learning process themselves.
2. The students doing the teaching gain new insights into the issues involved and prompted frequently to do more research and thinking in response to student-learner questions and comments.
3. All students involved come to realize that they have resources that they can tap and skills they can share. This facilitates and promotes learnings about the world of work in all areas.

When older students teach younger ones, there are usually scheduling, administration, and sometimes parent concerns about this approach that need to be dealt with to make it successful. These concerns and how they are handled will vary according to each particular school and community. Once they are met, both the lower grade and senior high or college or adult teachers involved will need to consider several other factors:

- The teacher-students must volunteer for the assignments. Compulsory teaching assignments usually produce poor results.
- The teacher-students must have a clear idea of:
  - What they are going to teach about careers. This should involve questioning the student-learners to discover **their** concerns about work.
  - How they are going to teach. Options include:

    one-to-one tutoring
    small group discussions
    team teaching
    written materials, homework, etc.
  - What their relationship to the student-learners should and should not be. Options include:

    authority figure
    primus inter pares
    pal
    older brother or sister
    counselor

- What the alternatives are for coping with and helping student-learners who express career problems of a personal nature. (E.g., "I'm too dumb to be a doctor.")

- Students must have a reasonable grasp of the career content area and the issues involved prior to teaching, but they should not feel they have to be "experts" in order to help others to learn.

INDEPENDENT STUDY

Independent study, when it flows from student concern, can be **one of two or three best forms of classroom activity** in a career education curriculum primarily because students are bound to have different concerns and independent study **enables different students to pursue career subject areas that pertain specifically to these different needs and concerns.** Activities in which an entire class must participate may ignore the needs and concerns about career of some and perhaps most pupils. Independent study can help to eliminate this handicap to teaching a career education curriculum. In addition, independent study:

- enables students to make their own decisions both about what career topics they study and how they study them. Decision-making by students in areas affecting their own education is crucial to:
  - the development of decision-making skills and the nurturing of feelings of competence, and
  - motivating students to learn about what concerns them;
- frees the teacher to devote more personal and in-depth attention to individual students; and
- enables students to pursue their concerns about specific career issues in greater depth than in classroom activities because they are free to do research using a variety of approaches (polls, reading, interviews, etc.).

RESEARCH AND REPORTS

Report writing is particularly useful in a career education curriculum for:

- giving more depth and meaning to research by organizing and articulating it into a visible medium;
- stimulating critical and intensive thinking about career issues by demanding a high quality final product; and
- training students in methods for finding answers to significant and controversial career questions.

Ideally, students should be allowed to suggest and report on areas of the work world that interest them. You may want to provide a list of suggested topics.

Places and agencies to contact that may offer research possibilities (literature, interviews, etc.) include:

1. State and city agencies:

   Bureau of Employment Security
   Bureau of Labor Statistics
   Manpower Development Authority

2. Local groups:

   Chamber of Commerce
   Fraternal Organizations, e.g., Rotary, Lions, etc.

Business and Industrial Professional Associations
Unions

3. Miscellaneous:

Newspaper Want Ads
Employment Agencies
Personnel Offices
Leaders in Industry, Commerce
Yellow Pages

Students should be given a set of written instructions on report researching and writing that consider the following areas:

- length: Length should be left up to the student. A report on career issues should be as long or as short as is necessary to say what needs to be said. Excessive direct quotations should be avoided.
- documentation, footnotes, and bibliographies: Reports should footnote all quotations by author, title, place, and date of publication. The purposes of footnotes and a bibliography need to be stressed: to enable the reader to both verify the accuracy of the statements and to find further literature references for pursuing his own interests.
- charts: Students should be discouraged from wholesale chart and diagram copying unless the chart is useful and a written interpretation of what the chart signifies is included.
- original thinking: Students should be required to include, wherever appropriate, original thoughts they have and personal opinions on controversial areas or contradictory factual statements they have read or heard. Since one of the major purposes of all reports should be to stimulate analytical thinking, such critical thought should be made a major focus.
- sources: Students should be taught to go beyond the use of encyclopedias in conducting their research, to use other reading materials and research methods (interviews, polls, etc.). While frequently written by experts, encyclopedias offer only one perspective on a problem, while much of the information needed in a career education curriculum may not be up to date or found at all in encyclopedias.

Upon completion, research papers should be read by the rest of the class or by those students who are interested in the areas researched. If the report was worth writing, it is probably worth reading. Although some students may write very poor reports, they may still be worth reading so that other students can suggest ways to improve them.

Students can read each other's written work after school or during study halls if it is placed in the school library (and kept on file to prevent loss). Students should be given a chance to discuss in small groups, centered around topics of common interest, their reports.

VOLUNTEER WORK

Learning by doing is a potent educational approach. One way to "do" is to engage in volunteer work. Particularly in areas of human behavior, such as awareness and exploration of careers, classroom learning is made more real and meaningful if it is accompanied by real life experiences in the area under study. You can encourage students to engage in volunteer work by informing them:

- that volunteer work, in addition to its altruistic dimension, can be personally useful as:
  - a learning experience about human nature and problems;
  - an opportunity to learn an enormous amount about oneself; and

– a way to make classroom learning about the world of work more meaningful;

- that volunteer work is desperately needed by many individuals with various problems and by many agencies and organizations seeking to help these people;
- about what public and private agencies in the community need student volunteers and what kind of work is involved with each; and
- about the type of work they can expect to do. The work expected of them may often be menial, but there will still be plenty of opportunity for students to learn about and observe career problems.

You may also want to:

- give students some form of academic credit for volunteer work, such as less homework, a grade, or free class time;
- require students to keep a log of their activities and thoughts about their volunteer work, but not require that it be turned in if the students feel it is a personal document;
- ask students to report to the class on their work at least once; and
- ask students to write articles about their work for submissions to the school and community newspapers.

Some types of organizations that deal with career issues and may welcome volunteers are:

- Health organizations such as hospitals, the Red Cross, nursing homes
- Educational and charitable organizations
- Youth service and recreation programs
- Social service agencies which work with the elderly
- Chamber of Commerce and information-tourist services.

WRITING

It is useful for students to write frequently in a career education curriculum for two basic reasons:

1. Writing stimulates intensive, creative and critical thinking about issues in a way that is often inadequately developed in verbal interchange.
2. Writing creates an opportunity for students to read what their classmates have written and this, in turn, helps the class become aware that **students** have important, interesting and informative ideas to communicate.

In a career education curriculum, there are several useful writing modes for students to engage in:

- Position papers stating and defending their stand on a career or occupational issue
- Imaginary handbooks that offer guidelines and opinions on laws, suggest advice to parents, other adults, or teenagers, or indicate desirable courses of action to agencies and institutions
- Imaginary dialogues and interviews between individuals who hold opposing points of view on career issues
- Reports (See section on Research and Reports.)
- Autobiographical and biographical narratives, both real and fictional

- Story completions (beginnings, middles or endings).

Since the major objective of this type of writing is to elicit student feelings and opinions, you may want to inform students explicitly that grammar and/or spelling will not be corrected. Attention focused on these areas often distracts students from the career issue being discussed and inhibits them from expressing their real opinions and feelings on future written exercises. Rather than risk criticisms of spelling and grammar errors, many students will often write very little, use only words they are sure they can spell, or both.

Try to avoid commenting on students' opinions on career issues in such terms as "that's a good idea," "good," "I agree," "I think you're wrong." When this is done, students become habituated to writing opinions and ideas they think you want to read, rather than what they truly believe. However, students do need to be commended and corrected in terms of their argumentative **techniques.** Students should be criticized on the basis of:

- whether they **supported** their opinions with logic and facts, or at least said their position could not be logically or factually defended;
- whether they took into account and "disposed of" arguments and considerations that **run counter** to their arguments and opinions; and
- whether they have made **untrue** statements.

Student writing is most productive when your attention is focused on whether opinions have been adequately defended rather than on whether you agree or disagree with them.

INDEX OF ACTIVITIES

Social Studies

1. **THE BICYCLE SHOP:** Students use role plays to experience small business occupations.
2. **THREE BURGERS, NO CATSUP:** Students investigate the fast food franchise industry through research, interviews, and observations and evaluate it in light of current course topics and as a career.
3. **MAKING SENSE OF DOLLARS AND CENTS:** Students interview and observe clerical and professional staff employed in the economic institutions in their community to explore office-related and finance occupations.
4. **COPS AND ROBBERS:** Students interview and observe people that operate the criminal justice system.
5. **THE SIX O'CLOCK NEWS:** Students study then produce a news broadcast.
6. **BLUE COLLARS IN THE FACTORY:** Students interview factory workers and study the manufacturing process.
7. **UNCLE SAM WANTS YOU:** A small group of students researches through reading or interviewing the type of careers available in the military and the advantages and disadvantages of a military career.
8. **'BUREAUCRATS' IN THE GOVERNMENT:** Students interview employees in local government agencies and discuss what it is like to work in a "bureaucracy."
9. **VOTE FOR US!:** Students volunteer to work for the election campaign of a candidate of their choice and report their findings and reactions to the class.
10. **HOW CAN I HELP?** Students role play a case worker and a client during a crisis situation.

English

11. **JOBS IN FACT AND FICTION:** Students prepare a reading list of literature relating to an interesting career and provide a report on the contents.
12. **THE NEWS ON SEX AND RACE:** Students evaluate advertising and television programs and their relationship to ethnic, age, sex, and geographic stereotyping.
13. **ACT NOW TO PLAN YOUR CAREER:** Students perform a socio-drama and the class reacts.
14. **JOBS, ETHICS, AND LIFESTYLES:** Students role play conflicts arising from a career lifestyle.
15. **QUESTIONS ABOUT JOBS:** Students simulate the job of survey desginer, pollster, and journalist by developing and administering a poll and then writing a newspaper story on the responses.
16. **ENGLISH ON THE JOB:** Students determine how English skills are used in different occupations by interviewing people in relevant careers and writing a character sketch.
17. **RESEARCHING CAREERS:** Students develop research skills by exploring one of the occupational clusters.
18. **GUIDANCE FOR JOB PROBLEMS:** Students role play guidance counselors helping clients with employment problems.
19. **PEER TEACHING:** Students tutor younger students or classmates in reading, writing, spelling and other language arts skills.
20. **COMMUNICATING THE NEWS:** Students produce a news broadcast.

Mathematics

21. **TO BE A TEACHER:** Students discuss instructional strategies for teaching mathematics and then apply these methods to in-class and/or after-school math teaching projects.
22. **CALCULATE YOUR TRIP:** Students visit a travel agency and then plan an imaginary trip and write trip-related mathematical word problems.
23. **DON'T FENCE ME IN!:** Students listen to people whose jobs involve fence building and then do calculations related to the mathematics concepts used in barrier construction.
24. **MATH IN THE HOME:** Students research different household management projects and apply mathematical concepts in a practical setting.
25. **DOW, JONES, AND EINSTEIN:** Students study various aspects of the financial world and "invest" in the stock market with imaginary money.
26. **BUYING CHARTS AND GRAPHS:** Students research and interview buyers in different industries, graph their findings, and present them to the class.
27. **FIGURING OUT OUR HEALTH:** Students visit health facilities to study how their statistics are recorded and then discuss how these statistics are obtained and used to improve community health.
28. **POLLING THE PUBLIC:** Students learn about the sampling process by developing and administering a poll.
29. **SURVEYING CAREERS:** Students interview and/or research careers of architects, civil engineers and land surveyors, and present findings to class.
30. **COMPUTERS:** Students research questions and/or conduct projects concerning the development of computers and computer programming.

Science

31. **UNDERSTANDING BATTERIES:** Students research how a battery works, what it does, and how to service a battery by interviewing gas station mechanics.
32. **TOILETS AND FUSES:** Students interview plumbers and electricians and make designs and models of plumbing and electric systems. Students role play repair jobs and safety precautions.
33. **DIGGING FOR JOBS:** Students research geological professions involving the extraction of natural resources from the earth's crust by interviewing or writing letters to persons in industries or government institutions involved in extraction of natural resources.
34. **A TREEFUL OF JOBS:** Students investigate the properties and uses of different types of wood by interviewing appropriate professionals who work with wood or wood products for their livelihood and role playing people involved in the life and uses of a tree.
35. **PREVENTING POLLUTION AND ENCOURAGING ECOLOGY:** Students examine and discuss chemical, biological, legal and social aspects of environmental pollution in their community by interviewing appropriate professionals in the field and by researching the effects of pollution in literature. Students then illustrate pollution and ecological principles by performing an ecology experiment.
36. **JOB CHEMISTRY:** Students investigate professional applications of qualitative and quantitative chemical analysis by interviewing and then role playing appropriate professionals in the field.
37. **PICTURE-PERFECT JOBS:** Students research, explore and analyze the interrelationships of light sound, electricity, chemistry and mechanics in audio-visual production by interviewing appropriate professionals in the field and constructing an experiment or display.

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38. **WORKING TO PRODUCE FOOD, HEAT, AND LIGHT:** Students examine the development, distribution and marketing relationships involved in the production of food, petroleum and electrical energy and then demonstrate and discuss these relationships through displays, flow-charts and/or role playing in class.
39. **UNDERSTANDING TRAVEL JOBS:** Students investigate the relationships of the science of navigation, mechanics and biology to the transportation fields of aeronautics, highway, rail and water by library research and interviewing appropriate professionals in the field.
40. **PRODUCING CHEMICALS, PLASTICS, AND SYNTHETICS:** Students investigate the production of industrial chemicals, plastics, steel, and synthetic fabrics by interviewing and then role playing appropriate professionals in the field.

Other Subject Areas

41. **PAINTING AND PLAYING FOR A LIVING:** Students evaluate their potential for a professional career in art or music by interviewing artists and musicians.
42. **SUPPORTING THE ARTS:** Students investigate and evaluate careers that involve art or music by interviewing individuals in those occupations.
43. **WORKING BEHIND THE WHEEL:** Students investigate, through research and interviews, careers which use the driving skills that they are learning.
44. **WORKING AT DRIVING SAFELY:** Students examine careers that influence the condition of their automobiles and the safety of their driving.
45. **TRANSLATING THE PROBLEM:** Students simulate a series of encounters between foreign language speaking persons and social service agency employees.
46. **WORKING IN A FOREIGN LANGUAGE:** Students interview or write to multi-national companies and organizations to learn how foreign language skills are used by their employees.
47. **FIRST AID ON THE JOB:** Students visit industries and/or farms to research occupational injuries and first aid techniques used to treat them.
48. **HEALTH SUPPORTS:** Students explore medical support service in their community by interviewing appropriate professionals in the field.
49. **WORKING TO STAY IN SHAPE:** Students interview people whose careers are linked with physical education, discuss attitudes toward sports, and set up their own physical education program.
50. **SUPPORT FOR PHYSICAL FITNESS:** Students investigate careers related to the sports and recreation industries by interviewing employees in these industries.